Industry September Sales Set Record; Commercial Volume Holds Up

(*Concluded from Page 1, Column 3*)

1935 totaled approximately 1,688,600 units.

World shipments of household electric refrigerators during September, as reported by 15 member companies of National Electrical Manufacturers Association (Nema), totaled 83,715 units, an increase of 25,610 over the reported sales of 58,105 units by 14 companies during September, 1935.

Sales of commercial refrigerating equipment during September, as reported to Nema headquarters by 15 member manufacturing companies, totaled 11,396 units. This compares with 17,726 units sold during August and 25,556 during July.

The September commercial sales figures, a decline of 6,330 units from the August total, probably represent a continuation of the seasonal drop. Comparable figures for the month's sales in 1935 are not available.

Bottled beverage coolers, pressure water coolers, and ice cream cabinet sales continued to lead the way in the commercial columns, the totals for all three classifications holding up well during the month.

83,715 Household Electric Refrigerators Sold by 15 Companies In September

The following 15 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for September, 1936: Apex Electrical Mfg. Co., Crosley Radio Corp., Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Co., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co.

The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., and Sears.

SALES FOR SEPTEMBER, 1936

Lacquer (Exterior) Cabinets Complete	Domestic Quantity	Domestic Value	Canadian Quantity	Canadian Value	Other Foreign Quantity	Other Foreign Value
1. Chest	846	$ 39,558	20	$ 971	193	$ 9,910
2. Less than 3 cu. ft.	192	11,572	....	....	....	....
3. 3 to 3.99 cu. ft.	2,565	150,527	48	2,703	1,998	114,740
4. 4 to 4.99 cu. ft.	11,744	762,103	444	30,533	2,957	195,803
5. 5 to 5.99 cu. ft.	10,260	769,715	254	20,330	1,441	112,475
6. 6 to 6.99 cu. ft.	18,564	1,411,013	47	4,134	974	99,763
7. 7 to 7.99 cu. ft.	4,369	456,060	127	13,897	345	35,466
8. 8 to 9.99 cu. ft.	1,159	111,636	....	....	38	4,346
9. 10 to 12.99 cu. ft.	9	1,918	....	....	2	331
10. 13 cu. ft. and up	....	....	....	....	....	....
11. Total Lacquer	**49,708**	**3,714,102**	**940**	**72,568**	**7,948**	**572,834**
Porcelain (Exterior Cabinets Complete						
12. Up to 4.00 cu. ft.	264	19,665	10	783	150	11,497
13. 5 to 5.99 cu. ft.	1,702	142,691	17	1,481	229	20,332
14. 6 to 6.99 cu. ft.	6,216	550,998	6	587	124	11,987
15. 7 to 7.99 cu. ft.	2,140	241,586	6	685	149	17,615
16. 8 to 9.99 cu. ft.	2,482	290,935	3	375	98	13,392
17. 10 to 12.99 cu. ft.	416	72,334	1	169	34	5,715
18. 13 cu. ft .and up.	246	57,127	1	254	27	6,490
19. Total Porcelain	**13,466**	**1,375,336**	**44**	**4,314**	**811**	**87,028**
20. Total—Lines 11 and 19	**63,174**	**5,089,438**	**984**	**76,882**	**8,759**	**659,862**
21. Separate Systems ¼ Hp. or Less	9,493	299,370	....	....	997	52,280
22. Separate Household Evaporators	179	3,824	50	691	79	1,877
23. Total—Lines 20, 21, 22	**72,846**	....	**1,034**	....	**9,835**	....
24. Condensing Units ¼ Hp. or Less	229	18,753	6	362	187	10,877
25. Cabinets—No Systems	684	19,841	1	16	6	591
26. Total Household	....	**$5,431,226**	....	**$77,951**	....	**$725,487**

Factory & Distributor Inventories Show 361,394 Units on Hand Sept. 30

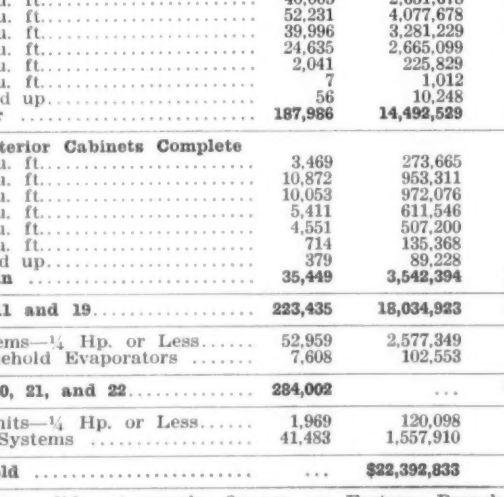
INVENTORIES FOR SEPTEMBER, 1936

Lacquer (Exterior Cabinets Complete	Factory Branch and Warehouse Quantity	Factory Branch and Warehouse Value	Distributor Quantity	Distributor Value
1. Chest	17,713	$ 897,073	1,026	$ 50,742
2. Less than 3.00 cu. ft.	287	17,288	132	7,955
3. 3 to 3.99 cu. ft.	11,015	665,395	5,605	308,422
4. 4 to 4.99 cu. ft.	40,005	2,651,678	11,309	755,428
5. 5 to 5.99 cu. ft.	52,231	4,077,678	19,830	1,508,162
6. 6 to 6.99 cu. ft.	39,996	3,281,229	17,525	1,494,026
7. 7 to 7.99 cu. ft.	24,635	2,665,099	7,354	753,886
8. 8 to 9.99 cu. ft.	2,041	225,829	764	85,105
9. 10 to 12.99 cu. ft.	7	1,012	27	4,658
10. 13 cu. ft. and up	56	10,248	9	2,083
11. Total Lacquer	**187,986**	**14,492,529**	**63,581**	**4,970,467**
Porcelain (Exterior Cabinets Complete				
12. Up to 4.99 cu. ft.	3,469	273,665	719	55,625
13. 5 to 5.99 cu. ft.	10,872	953,311	2,578	224,789
14. 6 to 6.99 cu. ft.	10,053	972,076	4,824	466,997
15. 7 to 7.99 cu. ft.	5,411	611,546	3,213	389,370
16. 8 to 9.99 cu. ft.	4,551	507,200	1,670	231,170
17. 10 to 12.99 cu. ft.	714	135,368	345	61,194
18. 13 cu. ft. and up	379	89,228	268	66,523
19. Total Porcelain	**35,449**	**3,542,394**	**13,617**	**1,495,668**
20. Total—Lines 11 and 19	**223,435**	**18,034,923**	**77,198**	**6,466,135**
21. Separate Systems—¼ Hp. or Less	52,959	2,577,349	...	...
22. Separate Household Evaporators	7,608	102,553	194	3,795
23. Total—Lines 20, 21, and 22	**284,002**	...	**77,392**	...
24. Condensing Units—¼ Hp. or Less	1,969	120,098	262	16,209
25. Cabinets—No Systems	41,483	1,557,910	20	2,221
26. Total Household	...	**$22,392,833**	...	**$6,488,360**

Note: One company did not supply figures on Factory Branch, and Warehouse Inventories.
Eight companies did not supply figures on Distributors Inventories.

Hardy MAYFLOWER Compressors Give Maximum Efficiency in Each Model

Sizes:
¼ to 1½ h.p.
Air Cooled



Sizes:
⅓ to 2 h.p.
Water Cooled

HARDY MANUFACTURING CO. Inc., 100 Davis Ave., Dayton, O.

Service Engineers Will Hear Discussions Of Many Technical Problems

(*Concluded from Page 1, Column 1*)

room, will officially end all convention proceedings.

Complete program for the meeting, as announced last week, is as follows:

Wednesday—Nov. 11

9:00 a. m. to 1:30 p. m. Registration. *Members must register to attend convention sessions.*

Inspection of exhibits.

1:30 p. m. Convention call to order—George L. Uetz, president of Memphis chapter.

1:45 p. m. Memphis Greets You—Clifford Davis, vice-mayor and commissioner of fire and police of Memphis.

2:00 p. m. Address: Patriotism and Preparedness—Edward F. Barry, Memphis member of the national speakers committee of the American Legion.

2:15 p. m. Introduction of National Officers.

2:30 p. m. Address of President—Paul Jacobsen, Chicago.

2:45 p. m. Address—J. D. Colyer, Detroit, president of the Refrigeration Supplies and Parts' Manufacturer's Association.

3:00 p. m. Address—H. S. McCloud, Pittsburgh, president of National Refrigeration Supply Jobbers' Association.

3:15 p. m. Report of National Secretary—H. T. McDermott, Chicago.

Report of National Treasurer—S. A. Leitner, Kansas City.

3:30 p. m. Progress of Educational Activities and Looking Forward to 1937—By George H. Clark, Detroit, chairman of National Educational and Examining Board.

3:45 p. m. Report of Committee on Adoption of Uniform Symbols—By Joe Askin, Buffalo, chairman.

4:00 p. m. Report of Committee on Uniform Cost Accounting System—By Harry Drownes, Chicago, chairman.

4:15 p. m. Consideration of Proposed Changes to National Constitution and By-Laws.

Adjournment and Inspection of Exhibits.

Ladies' Entertainment

2:00 p.m. Bingo Party—Colonnade Room, Hotel Gayoso.

Evening

9:00 p.m. Memphis chapter party at Colonnade night club, Hotel Gayoso. Ticket included in registration fee.

Thursday—Nov. 12

10:00 a.m. Tour of city by motor bus. Buses will leave promptly at 10:00 a.m. from hotel entrance.

1:30 p.m. Question box—conducted by George H. Clark.

2:00 p.m. A New Era in Refrigeration Controls—by Dan D. Wile, Detroit Lubricator Co., Detroit.

2:30 p.m. How to Figure Proper Compressor Capacities for Various Applications—By R. F. Polley, Mills Novelty Co., Chicago.

3:00 p.m. The Wonder World of Chemistry—sound film—R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Wilmington, Del.

3:30 p.m. How to figure a Specified Air Conditioning Job—By A. F. Hoesel, Peerless Ice Machine Co., Chicago.

4:00 p.m. How to Figure a Specified Truck Installation—By G. D. Wang, Milwaukee.

4:30 p.m. Report of Nominating Committee and Election of Officers.

Ladies' Enetertainment

Adjournment.

2:30 p.m. Cocktail Party—Colonnade Room, Hotel Gayoso.

Evening

8:00 p.m. Annual Banquet. Ticket included with registration fee.

11:30 p.m. Party at Beale Street Palace. Admission ticket included with registration fee.

Friday—Nov. 13

9:00 a. m. to 1:30 p.m. Inspection of exhibits.

1:30 p.m. Question box—conducted by George H. Clark.

2:00 p.m. Forcedraft Unit Coolers—How to Use Them and Specific Examples of How to Figure—by J. Askin, Fedders Mfg. Co., Buffalo.

2:30 p.m. The Use of Various Neutralizers for Refrigeration Gases When Purging, and the Use of Neutralizers in the System.

3:00 p.m. Conversion of Flat Belt Drives to V-Belt Drives—by R. E. S. Geare, L. H. Gilmer Co., Philadelphia.

3:30 p.m. Licensing Regulations—by Geo. L. Uetz, president, Memphis chapter.

4:00 p.m. The Storage and Distribution of Frosted Foods—by W. H. Bentley, Dallas.

4:30 p.m. Reports chapter delegates.

5:00 p.m. Invitations for next convention city. Reports of Convention Committees. Unfinished Business.

Ladies' Entertainment

1:00 p.m. Luncheon—Hotel Gayoso.

Evening

8:00 p.m. Exhibitor's Frolic—Ballroom, Hotel Gayoso.

Shipments of 11,396 Commercial Machines Reported By 15 Manufacturers in September

The following report of commercial refrigerating and air-conditioning equipment sales for September, 1936, were made to the Commercial Refrigeration Section of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) by the following 15 companies:

Brunner Manufacturing Co., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Corp., Kelvinator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Servel, Inc., Uniflow Manufacturing Co., Universal Cooler Corp., Westinghouse Electric & Manufacturing Co., York Ice Machinery Corp.

SALES FOR SEPTEMBER, 1936

	Domestic Quantity	Domestic Value	Canadian Quantity	Canadian Value	Other Foreign Quantity	Other Foreign Value	Quantity Total	Value World
1. Bottle Water Coolers—Complete	96	$ 7,920	....	$	24	$ 2,042	120	$ 9,962
2. Pressure Water Coolers—Complete	819	94,145	1	102	97	10,832	917	105,079
3. Water Coolers—Low Side Only	49	3,421	1	46	3	131	53	3,598
4. Ice Cream Cabinets—Complete	824	111,878	4	526	74	7,272	902	119,676
5. Ice Cream Holding Cab. Only (Remote)	210	28,171	2	188	22	1,856	234	30,215
6. Bottled Beverage Coolers—Complete	1,148	83,025	2	149	61	4,132	1,211	87,306
7. Milk Cooling Cabinets (No High Sides)	58	4,815	....	....	6	471	64	5,286
8. Air Conditioners—Self-Contained	95	18,426	....	....	113	28,079	208	46,505
9. Air Conditioners—Floor Type (No High Sides)	215	114,183	....	....	23	6,897	238	121,080
10. Air Conditioners—Ceiling (Cooling Only—No High Sides)	58	7,755	4	939	19	2,130	81	10,824
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides)	39	23,677	....	....	9	5,362	48	29,039
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces)	21	7,244	....	....	....	....	21	7,244
13. Condensing Units Less Than ⅓ Hp.	1,066	47,511	8	502	788	49,246	1,862	97,259
14. Condensing Units—⅓ Hp.	1,489	105,857	15	1,202	408	32,305	1,912	139,364
15. Condensing Units—½ Hp.	1,270	123,389	24	2,564	290	30,340	1,584	156,293
16. Condensing Units—¾ Hp.	905	111,818	17	2,316	192	26,088	1,114	140,222
17. Condensing Units—1 Hp.	623	94,639	7	1,289	64	10,254	694	106,182
18. Condensing Units—1½ Hp.	302	57,300	4	886	42	8,480	348	66,666
19. Condensing Units—2 Hp.	152	33,467	1	285	31	7,510	184	41,262
20. Condensing Units—3 Hp.	127	37,883	....	....	29	6,312	156	44,195
21. Condensing Units—5 Hp.	61	29,049	1	520	2	938	64	30,507
22. Condensing Units—7½ Hp.	21	14,318	....	....	2	1,153	23	15,471
23. Condensing Units—10 Hp.	29	22,334	1	900	2	1,340	32	24,574
24. Condensing Units—15 Hp.	19	17,804	....	....	6	4,937	25	22,741
25. Condensing Units—20 Hp.	21	23,136	....	....	1	1,232	22	24,368
26. Condensing Units—25 Hp.	17	21,873	....	....	1	1,200	18	23,073
27. Total Lines 13 to 26 Inclusive	**6,102**	....	**78**	....	**1,858**	.....	**8,038**	....
28. Total Lines 1, 2, 4, 6, 8, and 27	**9,084**	....	**85**	....	**2,227**	....	**11,396**	....
29. Commercial Evaporators (Not Reported Above)	3,838	89,640	167	4,431	1,171	36,872	5,176	130,943
30. Air-Conditioning Evaporators (Not Reported Above)	154	21,526	....	....	6	1,073	160	22,599
31. Total Commercial & Air Conditioning	....	**$1,356,204**	....	**$16,845**	....	**$288,484**	....	**$1,661,533**

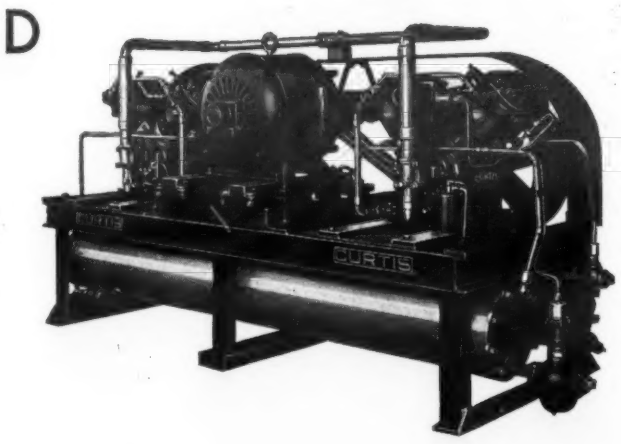
Policies and Profits GO HAND IN HAND

THE product alone is not enough to insure the greatest dealer profits — the dealer must have the active cooperation of the manufacturer at all times.

It has always been a merchandising policy of Curtis that the dealer comes first. Curtis never sells through any other outlet than its own dealers nor direct. The Curtis plan is strictly one of cooperation, not competition.

Curtis builds a complete line of condensing units and refrigeration equipment for all purposes with a background of 82 years successful engineering designing and manufacturing experience.

Curtis products, backed by the Curtis policies of strict dealer cooperation, make big profits today and assure a sound, permanent business for all time to come. It will pay you to investigate. Some highly desirable territory is still available. Write to Curtis today.



CURTIS CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue - - - - Saint Louis, Missouri

THE NEWSPAPER OF THE INDUSTRY

AIR CONDITIONING AND

WRITTEN TO BE READ ON ARRIVAL

REFRIGERATION NEWS

Established 1926 and Registered U. S. Patent Office as Electric Refrigeration News
Member Audit Bureau of Circulations. Member Associated Business Papers.

VOL. 19, NO. 11, SERIAL NO. 399
ISSUED EVERY WEDNESDAY

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Subjects Chosen For Speeches at ASRE Meeting

Air Conditioning, Thermal Problems, Absorption Units to Be Discussed

NEW YORK CITY—New developments in air conditioning, thermal problems, and the growing importance of absorption refrigeration are among subjects which members of American Society of Refrigerating Engineers will hear discussed at the organization's thirty-second annual meeting, to be held in Hotel Pennsylvania here Dec. 2 to 4.

Other subjects to be covered during the meeting include a review of refrigeration and air-conditioning codes and standards, evaporative cooling methods and equipment, a report on residence cooling research at University of Illinois, beer dispensing methods, the problem of moisture in refrigerator walls, and a discussion of brine solution in truck bodies.

In addition to technical papers, several leaders in the refrigeration and air-conditioning industries will present short talks at each of the sessions during the three-day meeting. Names of these speakers will be announced later.

Social events during the convention will include a welcome luncheon on the opening day, followed by a tea for women guests, a dinner for the council, a night club party, a sightseeing tour, and the annual dinner dance on the Pennsylvania Roof.

First session of the convention will begin at 10 a. m. on Wednesday, Dec. 2, following registration, which opens an hour earlier. Chairman of this session, as yet unannounced, will be introduced by President L. S. Morse. Topic of the session will be "Aspects of Air Conditioning."

"Residence Cooling Investigations" will be discussed by Prof. H. J. Macintire of University of Illinois; "A Review of Refrigeration and Air-Conditioning Codes and Standards" will be given by Chester Lichtenberg, General Electric Co., Fort Wayne, Ind.; and W. L. Fleisher, New York City consulting engineer, will read a paper on "Evaporative Cooling Methods and Equipment."

Second session, beginning at 2 p. m. that afternoon, will be presided over by A. R. Stevenson, Jr. Topic of the session will be "Thermal Problems."

The following papers will be read at this session:

"Moisture in Relation to Insulated Walls," by Harvey B. Lindsay, president of Dry-Zero Corp.; "Condensing Water Economizers," by Byron E. James, York Ice Machinery Corp.; and "Air Conditioning Applied to Lithography," by L. C. Weber, of the Bureau of Standards, Washington, D. C.

A report of the activities of the joint committee of standards will be made by Chairman Glenn Muffly.

(*Concluded on Page 2, Column 5*)

Air-Conditioned Trains Boon to Football Teams, Auburn Coach Claims

AUBURN, Ala. — Air-conditioned railroad coaches have greatly minimized the sometimes disastrous effects of long road trips for football teams, declare Coach Jack Meagher and Trainer Wilber Hutsell of Alabama Polytechnic Institute, better known to football fans as "Auburn."

Previous to the introduction of railroad air conditioning, Trainer Hutsell stated, players were affected by dust and intense heat during long train rides, and always took several days to regain their form after such a trip.

On a recent trip to the west coast, however, Auburn football men enjoyed a constant temperature of 76° F. and a dustless atmosphere while on the train. As a result, Trainer Hutsell said, the men arrived in fine condition. (However, Auburn lost this game to Santa Clara, one of the few unbeaten teams in the country.)

Coach Meagher stated that he would no longer think of taking his men on such long trips without air-conditioned transportation.

Midwest to Start Production in New Plant on Dec. 1

GALESBURG, Ill—Production in the new plant of Midwest Stamping & Enameling Co., manufacturer of commercial and domestic refrigerator cabinets, will start here Dec. 1, according to Sales Manager J. C. Battles.

The last six weeks have been spent in moving company equipment from the old plant at Morrison, Ill., to the new location.

Although the main plant here, formerly occupied by Ingersoll Steel & Disc Co. (now a division of Borg-Warner Corp.), has 68,000 sq. ft. of floor space, it was necessary to construct three additions to accommodate the 1937 business which has been contracted for. A total floor space of 105,000 sq. ft. will be utilized, not including the two-story office building.

Buildings nearing completion include a crane building, to be used for steel storage, shear room, and metal fabricating department; a completely air-conditioned paint room, equipped to handle high bake synthetic enamels and having a capacity of 50 refrigerator cabinets per hour; and a room housing the commercial cabinet assembly department.

Additional departments will be maintained to handle welding, woodworking, and insulation production.

Two switch tracks serve the new plant, one for incoming freight and one for outgoing shipments. The crane building is located over the inbound track to facilitate handling of steel and fabricated parts.

The entire plant, which is almost completely conveyorized, is on one floor, and is designed to necessitate a minimum of material handling.

Hospitals Report On Benefits of Conditioning

NEW YORK CITY—Rapid increase in the use of air conditioning in hospitals is analyzed in a recently published report of the American Hospital Association's Committee on Air Conditioning. Forty-eight hospitals throughout the country gave data on the actual results of equipment which they have installed.

Although insufficient time has elapsed in many cases for authentic statement as to effects of air conditioning in treating specific diseases, the experience of some of these institutions provides interesting data on the benefits of air conditioning to patients.

Four hospitals reported definitely favorable results in asthma, one in respiratory infections, one in sinusitis, one in cardiac conditions, one in prematurity, and three in post operative treatment. Several favor keeping the patient in an air-conditioned room after the operation, and one calls attention to the value of keeping the patient in conditioned air for several days before the operation.

The hospital report emphasizes the fact that 55% relative humidity is considered optimum, but that the normal American interior in winter is kept at one-third of that humidity.

Frick Licensed Under Auditorium Patents

NEW YORK CITY—Frick Co. of Waynesboro, Pa., manufacturer of refrigerating and air-conditioning equipment, has just signed a license agreement with Auditorium Conditioning Corp. of New York City.

The agreement gives Frick the same privileges as all other licensees.

Cincinnati U. Has Class in Refrigeration Developments

CINCINNATI—University of Cincinnati has inaugurated a new evening course dealing with recent developments in the refrigeration field, under direction of C. A. Joerger, professor of mechanical engineering.

Planned for salesmen, service men, and employes of refrigeration manufacturers and dealers, the course covers both domestic and industrial refrigeration, taking up such phases as refrigerants, insulation, instruments, operation, control, and safety devices.

Speakers Listed For Dept. Store Clinic Dec. 2-3

Quinn and Taubeneck to Be on Program at G-E Meeting

CLEVELAND—General Electric Co. will sponsor the Fifth Annual Merchandising Clinic for department stores at Nela Park here Dec. 2 and 3. Ralph C. Cameron, assistant sales manager in charge of department store activities on specialty appliances, has just announced the first group of speakers who will address the clinic.

T. K. Quinn, Maxon, Inc., will discuss "Advertising in 1937." George F. Taubeneck, editor of AIR CONDITIONING AND REFRIGERATION NEWS, will tell of "Retailing in Odd Corners of the World." J. D. Chambers, Dry-Block Mercantile Corp., Memphis, Tenn., will present arguments in proof of his thesis: "That Department Stores Offer the Greatest and Fastest Method of Distributing Household Appliances."

Channing E. Sweitzer, managing director of National Retail Dry Goods Association, and Arthur J. Pete, president of the Lion Store, Toledo, will also speak.

Fulton Sylphon Puts Automatic Expansion Valve Line on Market

KNOXVILLE, Tenn.—Several innovations in valve design mark the Sylphon No. 5000 automatic expansion valve which has been introduced by Fulton Sylphon Co. of this city.

In designing the valve Fulton Sylphon engineers sought to eliminate as far as possible troubles arising from such causes as accumulation of dirt or moisture at the orifice, corrosion of needle or seat, bellows failure, moisture entering the valve body through adjustment opening, and freezing between bellows folds.

A maximum of seat protection from clogging was believed to have been secured by employing a high-efficiency disc filter unit. This filter unit is of the type widely used for industrial filters and is claimed to have a larger effective area than a screen or strainer of comparable size.

To check as much as possible valve leaking due to corrosion of needle or seat, Fulton Sylphon has employed what they believe to be a new design. A non-metallic poppet of inert composition closes against a metallic seat of special alloy. Tight seating is obtained.

The poppet, being of inert material, is not attacked by corrosive agents, the engineers claim. If slight corrosion or wear occurs on the seat, the hard alloy is said to "work" into the less dense composition of the poppet and tight closure is still obtained. As dissimilar metals are not present

(*Concluded on Page 14, Column 5*)

Air Conditioning Makes Gains in Los Angeles, Says Van D. Clothier

DETROIT—Air conditioning in Los Angeles, after lagging behind progress made in other metropolitan centers, has shown great forward strides in the past half-year, declared Van D. Clothier, manufacturers agent in Los Angeles for several lines of refrigeration supplies, during a visit here last week.

Several cocktail bars and restaurants, a whole chain of retail shoe stores, and the major department stores in Los Angeles now have air conditioning, he added.

Mr. Clothier, who represents Bush Mfg. Co., Kerotest Mfg. Co., Mayson Mfg. Co., Virginia Smelting Co., and Wolverine Tube Co., came here from Pittsburgh, where he had been attending a Kerotest sales convention.

After visiting the Wolverine Tube Co. here he left for Memphis for the Parts and Jobbers Association conventions to be held there this week, taking with him a new Packard which he will drive home, and Ted Wilson of Kerotest and Al Kingerly of Wolverine Tube, also convention bound.

Peerless Leases Large Factory On Long Island

LONG ISLAND CITY, N. Y.—Peerless Ice Machine Co., manufacturer of fin coils and refrigeration accessories, has leased the former Ruben Shoe Co. plant at 43-20 34th St. here, according to President R. W. Kritzer.

The new plant, a four story building containing approximately 55,000 sq. ft. of floor space, will give Peerless more than four times the area that it has been occupying in the past several years, Mr. Kritzer states.

A total of $12,000 is being spent for remodeling the plant, and new machinery is being installed. All manufacturing and office operations will be moved to the new location as rapidly as possibly without interruption in production.

Henry E. Kritzer, vice president of the company and formerly located at the Chicago plant, will now have his headquarters in the New York factory.

Airtemp Exhibits Self-Contained Conditioner

DAYTON—A self-contained air conditioning unit in new design in which all machinery, including compressor, motor, condenser, and cooling coils is contained in one cabinet, recently was introduced by Airtemp, Inc., Chrysler Corp. subsidiary here.

Shown for the first time at the National Hotel Show in Grand Central Palace, New York City, the new unit is of 3-hp. capacity, occupies only 20 by 33 inches of floor space, and stands 7 feet 6 inches high. Its compactness is made possible through use of a new reciprocating type radial compressor, so designed that it can be suspended on rubber mounting in the base of the cabinet.

Possessing one advantage of a duct system, but eliminating numerous installation difficulties, the new unit

(*Concluded on Page 9, Column 3*)

Automatic Products Co. Buys New Plant

MILWAUKEE—Automatic Products Co., manufacturer of control instruments, has purchased the enameling plant formerly owned by Fuller-Warren Stove Co., and will house all its operations there beginning about Thanksgiving, according to President Roy W. Johnson.

The new one-story building will give Automatic Products more than 60,000 sq. ft. of manufacturing space with railroad facilities, Mr. Johnson said. Four acres of ground surrounding the plant are included in the purchase.

A true "depression baby," Automatic Products began operations in 1931, with 2,200 sq. ft. of floor space and a staff of three men. Present quarters of the company, at 121 North Broadway, cover about 22,000 sq. ft. of floor area, with employment totaling about 200.

Markland Resigns to Join Distributorship

DETROIT—H. E. Markland has resigned as sales manager of Universal Cooler Corp. to take an active part in the management of Rowlands-Halleck Co., Miami RCA Victor distributor, in which he has had a financial interest for some time.

The company is planning to open branch offices in Jacksonville and Tampa, Mr. Markland said, and will add a number of other household appliances to its radio line.

Mr. Markland came to Universal Cooler as sales manager in the fall of 1935, after 10 years in the refrigeration industry, during which time he was with Kelvinator and Leonard as assistant domestic sales manager, midwest regional manager, and head of the Cleveland and Philadelphia branch offices.

Previous to this he had been sales manager of Detroit Flag & Mfg. Co., and sales director for several automobile distributors in Colorado and California.

Air Conditioner Orders for Sept. Total $3,351,999

Steady Decline Continues; Sales 24% Below Year's Peak Set in May

WASHINGTON, D. C.—Value of September orders for air-conditioning equipment totaled $3,351,999, according to statistics recently released by Director William L. Austin of the Bureau of Census.

These figures, covering 98 manufacturers, show that September sales were 6.5% below the $3,584,157 total of August, and 24% below the year's peak of $4,412,681 established in May.

Air-conditioning equipment orders booked for the first nine months of this year total $31,508,456. Of this amount, $14,506,414 is in the air-conditioning group proper, $10,596,843 in the fan group, and $6,405,198 in the unit heater division.

September sales totals in the three groups were: air conditioning, $1,040,647; fans, $1,297,754; unit heaters, $1,013,598.

Sales of self-contained units dropped 18.7% in September from August, while systems not self-contained fell off 34.8%.

Orders for central station systems

(*Concluded on Page 2, Column 2*)

Perfection Markets Line of Water Regulators

HARVEY, Ill.—Newest product to be developed by the Perfection Refrigeration Parts Co. of this city, which has put a number of new lines of refrigeration parts in the field during the past year, is a complete line of water regulators. These were introduced to the field Nov. 1.

Perfection water valves were developed by Charles F. Toussaint—who was the originator of the direct-operated modulating control valves, and other products for the refrigeration and air-conditioning fields.

Working closely with George Daskal, who is in charge of all Perfection engineering, Mr. Toussaint, in designing this new line of water regulators, set about to eliminate possible causes for grief, and to retain approved features of previous designs.

This line of Perfection water regulators covers a range of opening points from 45 lbs. to 175 lbs. gauge, available in a range of sizes from ⅜ of an inch to 3 inches inclusive, all standard pipe sizes. Regulators under ¾ of an inch have screw type, and those from ¾-inch size have easily removable bolt-on type flange cap. This latter feature should appeal to men who have had the problem of trying to remove rusted and seized caps of large diameters from old

(*Concluded on Page 16, Column 5*)

White Made Manager Of Westinghouse Export

NEW YORK CITY — John W. White, former managing director of the Cia Westinghouse Electric Internacional, S.A., with headquarters at Buenos Aires, Argentine, has been appointed general manager of the Westinghouse Electric International Co., with headquarters at 150 Broadway here.

Born at Indianapolis in 1889, Mr. White received his early education at Randolph-Macon, where he pursued an academic course. While engaged with Westinghouse at its main works at East Pittsburgh, he attended night courses at the Carnegie Institute of Technology. Mr. White was first employed by Westinghouse in 1905, and worked at East Pittsburgh until 1912.

He was appointed manager of the central station and transportation divisions of the Detroit office in 1917. Later he was sent to be Westinghouse manager in Cuba in 1918. Successive positions included that of managing director of the then Westinghouse Co. of Japan in 1925, and in 1931 managing director of the company's Argentine operations, which position he held until his present promotion.

Practical Refrigerating Engineers Meet In Chicago for Twenty-Seventh Annual Convention This Week

CHICAGO, Nov. 10 — The 27th annual convention of the National Association of Practical Refrigerating Engineers opened at the Drake hotel today and will continue until Friday.

Arranged by the association's educational committee, the program for the week consists principally of lectures on "larger phases" of the industry. Supplementing these lectures is an educational exhibition containing products of representative companies and arranged to show the latest developments in refrigeration equipment and service.

The speakers and their subjects are as follows:

"Application and Use of Instruments," J. W. Murphy, president, J. W. Murphy Co., Chicago.

"Locker Refrigeration," A. L. Blatti, chief engineer, Railways Ice Co., Chicago.

"A Safety Program for Refrigerating Engineers," W. Dean Keefer, director, Industrial Division, National Safety Council, Chicago.

"Refrigeration Engineering in the Brewery," C. G. Bibelow, chief engineer, Freyn Engineering Co., Chicago.

"A New Day for Ice Refrigeration," George Lange, vice president, American Ice Co., New York City.

"New Developments in Refrigeration," George Bright, president, George B. Bright Co., Detroit.

"Proper Use and Maintenance of Power Control Equipment," F. H. Milliken, chief engineer, Switchboard and Controls Division, Ideal Electric & Mfg. Co., Mansfield, Ohio.

"Fundamentals in Handling Air," Hal McPherson, Consulting Engineer, Chicago.

"Present Status of Ice Comfort Cooling," Harry Holbrook, assistant plant manager, Union Ice Co., San Francisco.

"Efficient Operation of Air Conditioning Systems," Samuel R. Lewis, Consulting Mechanical Engineer, Chicago.

"Present Trends in Small Machines," John Taylor, foreman, Refrigeration Dept., Commonwealth Edison Co., Chicago.

"Chemistry for the Refrigerating Engineer," D. W. Haering, president, D. W. Haering & Co., Chicago.

Unit Heater Sales Rise in September

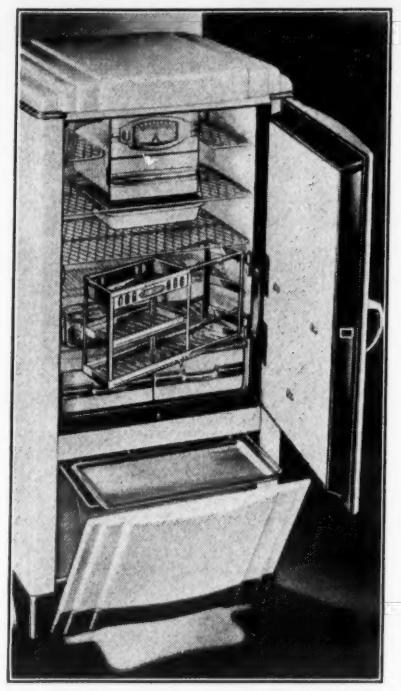
(*Concluded from Page 1, Column 5*)

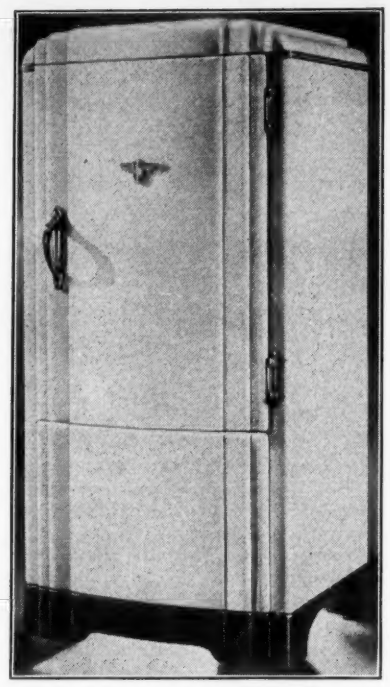
showed an interesting contrast. Industrial systems of this type dropped $34,177 from an August figure of $141,022, while human comfort systems rose to $341,969 from an August mark of $286,170.

Orders for air washers dropped 30.2% during September, the August total being $51,916. Air filters, however, rose from an August total of $11,531 to $14,952 in September, and orders booked for humidifiers were $83,506, against a $73,921 August total.

In the fan group, September orders showed a decline of $135,269 from the August total, while orders for unit heaters totaled $1,013,598, compared to the $870,746 figure for August.

The Stewart-Warner for 1937





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Stewart-Warner's 11-Model Line Boasts New Beauty, Six 'Exclusive' Features

CHICAGO — Stewart-Warner's 1937 line of household electric refrigerators, introduced to distributors during a two-day convention here a fortnight ago, includes 11 models, ranging in size from 4.5 to 8.1 cu. ft. net storage capacity. Eight "Deluxe" and three "Master" models make up the series. Four of the units have exterior finishes of porcelain, the rest are finished in Dulux.

Exterior appearance of the cabinet has been changed from that of the 1936 series of units, and new beauty of design has been added.

Noteworthy are six features said to be exclusively Stewart-Warner: the improved Sav-A-Step, the new automatic Slid-A-Tray, a 16-point illuminated airplane dial cold control, reversible evaporator door, a "vapor sealed" cabinet, and the twin-cylinder "Slo-Cycle" compressor, standard equfpment this year on all models.

A novel note in refrigerator design is apparent when one opens the door of a Deluxe model Stewart-Warner. Color has been added to the interior by means of a jade green Tenite panel surrounding the cold control. Handles on the sliding vegetable and fruit drawers also are of Tenite, as are the handles for the evaporator door, and the Slid-A-Tray button.

Rubber ice trays, double-depth trays, a four-piece Kontanerette set, the Tilt-A-Shelf (which lifts up for tall bottle storage) are other features of the deluxe series of units.

Largest models in the Deluxe series, 867 and 867-P, the latter with porcelain exterior, have net storage capacities of 8.1 cu. ft. and shelf areas of 17.1 sq. ft. Equipment includes the Sav-A-Step, Slid-A-Tray, illuminated control, vegetable freshener and fruit basket, porcelain evaporator, a four-piece Kontanerette set, and five ice trays, one double-depth, with a capacity of 141 cubes, or 12 lbs. of ice, per freezing.

Insulation all around is 3½ inches, and the units are powered by a twin-cylinder compressor of ⅛-hp. capacity.

Models 767 and 767-P, in Dulux and porcelain exteriors, have net storage capacities of 7.4 cu. ft. and shelf areas of 15.9 sq. ft. Equipment is the same as in the larger models, as is the ice cube capacity. These units are also powered by a ⅛-hp. compressor, twin cylinder.

Models 667 and 667-P have capacities of 6.3 cu. ft. net storage capacity and shelf areas of 15.2 sq. ft. These models have four ice trays, one double depth, with a capacity of 93 cubes, or 8 lbs. of ice, at a freezing. Insulation in these models is 3 inches all around, and the ⅛-hp. twin-cylinder compressor is used.

Smallest models in the "Deluxe" series, 567 and 567-P, have cubic capacities of 5.64 cu. ft., and shelf areas of 12.6 sq. ft. Ice cube capacity of the units is the same as the next larger size, as is thickness of insulation and compressor capacity.

In the "Master" series, largest model is the 657, of 6.3 cu. ft. net storage capacity and 15.2 sq. ft. shelf area. The 657 model has an 11-point control, vegetable freshener, sliding fruit basket, evaporator with reversible door, round wire shelving, and one sliding shelf.

Model 557 has 5.64 cu. ft. net capacity, 12.6 sq. ft. of shelf area, and the same features as the model 657. Master model 457 has 4.5 cu. ft. net capacity, and 10.2 sq. ft. of shelf area, but it does not include some of the "convenience" accessories found in the other two Master series models.

TVA Brings Triple Power Consumption to Athens

ATHENS, Ala.—Electric consumption in Athens has tripled since June 1, 1934, when it first received TVA power, according to recent announcement by Tennessee Valley Authority.

On Sept. 1, 1936, 78% of the city's customers had electric refrigerators, 35% electric ranges, and 14% electric water heaters. During the period of TVA power service, number of customers increased from 692 to 1,700.

Program Released For ASRE Annual Meeting Dec. 2-4

(*Concluded from Page 1, Column 1*)

Third session of the convention, opening at 10 a. m. Thursday, Dec. 3, will be held jointly with American Society of Mechanical Engineers.

"Method of Computing Thermal Properties of Oxygen and Nitrogen" will be covered by W. L. DeBeaufree; and "Psychrometric Data with Reference to Low Temperatures" will be discussed by Willis H. Carrier, chairman of the board of Carrier Engineering Corp.

Thursday afternoon's meeting, under the chairmanship of H. M. Williams, will have as its topic "The Commercial Field." Papers to be read at this session include "Beer Dispensing Methods," by John Wyllie, Temprite Products Corp.; "Thermal Expansion Valve Requirement for Freon," by J. C. Bergdoll, York Ice Machinery Corp.; "Brine Solutions in Truck Bodies," by O. S. McGuffey, Lansing, Mich.; and "Commercial Absorption System," by Glenn F. Zellhoefer, Williams Oil-O-Matic Heating Corp.

Fifth and final session, to be held on Friday morning, Dec. 4, will be chairmanned by Mr. Morse. Topic will be "Absorption Methods."

Papers will include "Silica Gel in Air Conditioning," by W. E. Stark, Bryant Heater Co., Cleveland; "Problems in Household Absorption System," by Dr. W. R. Hainsworth, vice president of Servel Corp., New York City; and "Lithium Chloride System," by an unannounced speaker.

Vacuum Cleaner Sales Total 104,944 in Sept.

CLEVELAND — Vacuum sales for the month of September totaled 104,944 units, according to a report made public by E. Murray of the secretary's office of Vacuum Cleaner Manufacturers Association.

... AND WE'RE Still WORKING NIGHTS

● The strong preference of Refrigeration Manufacturers and Service Men for Wolverine Copper Tubing has kept us working nights for many, many months. To keep up this high production peak we maintain the most modern mill in the country. Even so our up-to-the-minute machinery has been taxed to meet your demand for more tubing.

But . . .

No matter what the production schedule calls for, no tubing is ever shipped which does not conform in every respect to the ASTM specifications and to the high uniform quality that has made Wolverine Copper Tubing the accepted standard of the Refrigeration and Air Conditioning Industries.

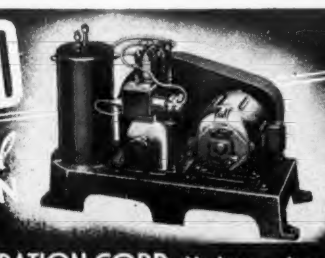
The famous Wolverine Solder Seal keeps the interior as clean as the day it was made. In addition, each coil is wrapped in heavy crepe paper to insure cleanliness and labeled for your convenience. Meets all requirements for manufacturer and for service work.

Wolverine Copper Tubing for Air Conditioning types K, L, and M are made to ASTM specifications and may be had in either hard or soft temper. Hard temper tubing is furnished in straight 20-foot lengths. Soft temper tubing is coiled in 30, 45, and 60-foot lengths. Type K is tested and listed under the Re-examination Service of the Underwriters' Laboratories.

Made to close tolerances—Wolverine tubing fits any standard solder or compression fitting on the market.

WOLVERINE TUBE CO.
1411 CENTRAL AVENUE DETROIT, MICHIGAN

COPELAND Commercial REFRIGERATION



Precision-Built for LONG LIFE

COPELAND REFRIGERATION CORP. Holden Ave. at Lincoln · DETROIT

Announcing the SYLPHON AUTOMATIC EXPANSION VALVE NO. 5000

Sylphon

NON-METALLIC, NON-CORROSIVE VALVE POPPET GIVES LONGER LIFE.

PACKLESS CONSTRUCTION—MOISTURE-PROOF. NO RUBBER BREATHER CAP USED.

HIGHLY EFFICIENT, EASILY REMOVABLE FILTER OF AMPLE CAPACITY.

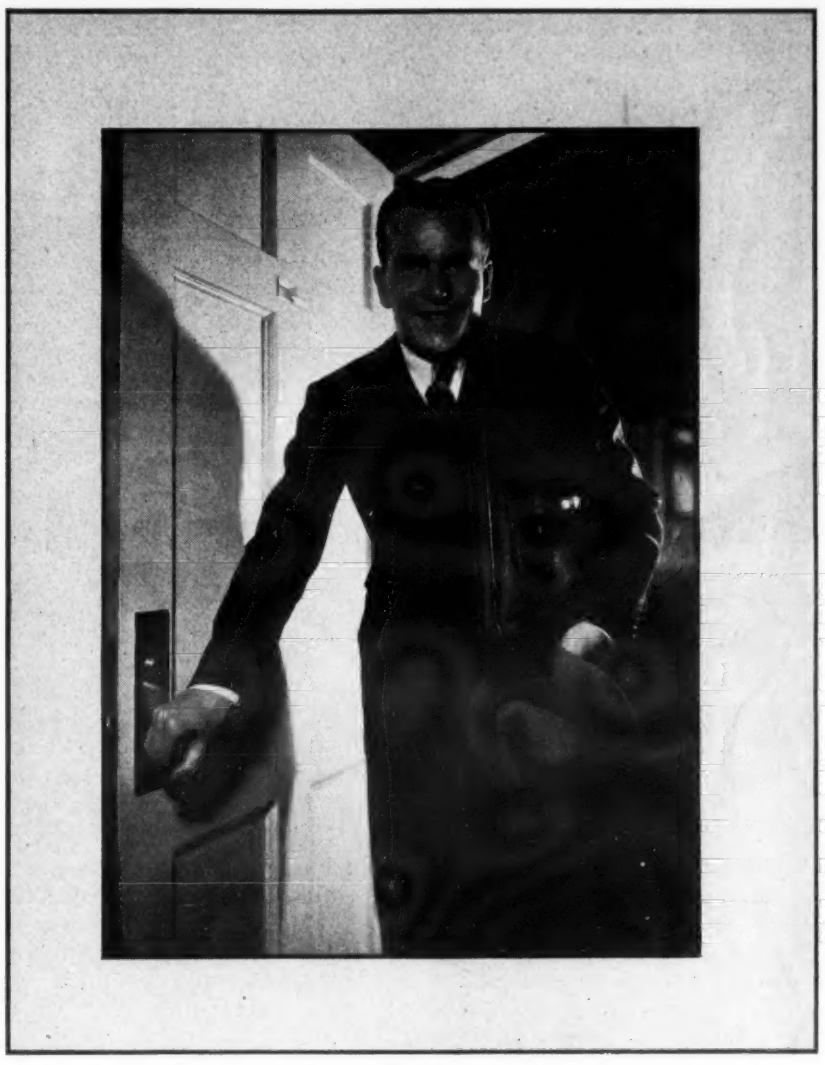
RENEWABLE POPPETS AND SEAT—ELIMINATES RETURNS TO FACTORY.

New important improvements contributing to longer life, superior performance and a minimum of servicing, mark this Sylphon Valve as a big step forward in automatic expansion valve design—recommend its use both as standard equipment and for replacement service on Methyl Chloride, Freon and Sulphur Dioxide systems.

The product of over twenty years' experience in the development and manufacture of devices for the refrigeration industry—the quality of this valve meets the high standard of perfection maintained for all products bearing the Sylphon trademark.

See this valve at Memphis Convention, November 11th to 14th, or write for further information.

REFRIGERATION DIVISION
FULTON SYLPHON CO.
KNOXVILLE, TENN.



Air Conditioning *NEEDS SALESMANSHIP*

SALES of air conditioning equipment amounting to $28,156,456 for the first eight months this year signify two things: a vast waiting market exists, the industry needs more aggressive salesmanship.

Air conditioning costs money. Cost is a big sales resistance. To attain *volume*, air conditioning must be *sold*.

Much of the air conditioning equipment that has been installed has been *bought*—according to blue prints, specifications, and bids.

Creative selling has been limited.

Ten years ago when household electric refrigerators sold for $400, mechanical refrigeration met with sales resistance. Salesmanship was required to sell more than 10 million household refrigerators and 1½ million commercial installations since 1926.

The key to the air conditioning market is in the hands of distributors.

Volume sales depend upon *sales ability*.

The same group of distributing organizations which has been so outstandingly successful in marketing mechanical refrigeration during the past 10 years, both the fat years and the lean, are today turning their eyes to air conditioning.

Profit possibilities in this newer field excite their imagination and challenge their selling instincts.

Many of them have already entered the air conditioning business and are successful.

A very large number, however, are still open for satisfactory connections. They are looking for the right kind of franchise, the right equipment, the right price.

For 10 years this group of distributing organizations has looked to the NEWS for authentic information relative to all factors of the refrigeration industry. Now they also look to the NEWS for their air conditioning information.

Your advertising in the NEWS will be read by them with a great deal of interest at this time.

★

Coming: Two Special Issues

FOREIGN TRADE NUMBER, DECEMBER 2

An appraisal of the present foreign market for refrigeration and air conditioning and its future opportunities.

AIR CONDITIONING PROGRESS NUMBER, JANUARY 6

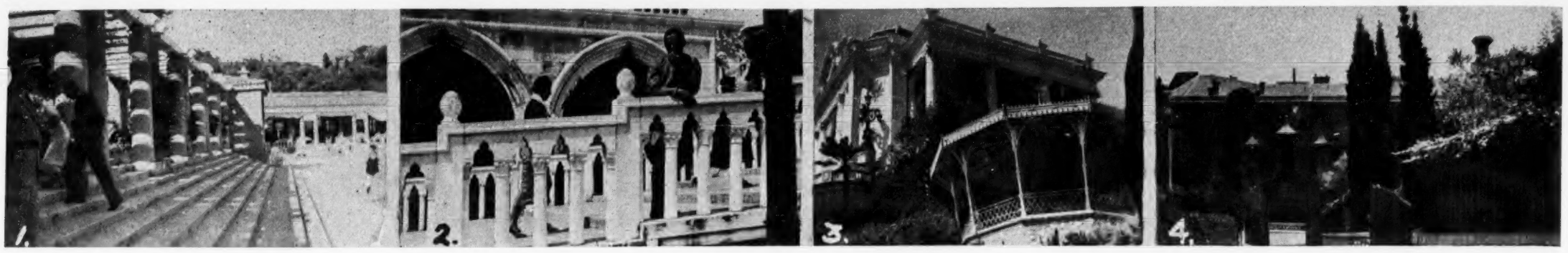
An analysis of the accomplishment to date in selling air conditioning to the public, with discussions of the industry's problems by leaders in the field.

AIR CONDITIONING AND
REFRIGERATION NEWS
Business News Publishing Co., 5229 Cass Ave., Detroit, Michigan

Announcing
The appointment of
JOHN B. GALLAGHER CO. INC.
As New York Representative
11 West Forty Second Street

THIS ADVERTISEMENT WILL APPEAR IN THE NOVEMBER ISSUE OF "ADVERTISING AGENCY"

Examples of the Elaborate Architecture So Typical of Lavish Monte Carlo



1. The Monte Carlo Beach Club, another good example of the elaborate architecture which Monte Carlo residents and visitors find so attractive. 2. Unfortunates who have lost their savings in the Casino used to jump from this point to end it all. Perhaps the man in the photo is picking out a landing spot for some future occasion. 3. A powerful telephoto lens furnishes a close-up of this marble villa, perched high on a crag in Monaco. 4. A typical Monte Carlo home, palatially constructed, expensively landscaped.

Around the World

With George F. Taubeneck

There's very little refrigeration around the tiny principality of Monaco, and no air conditioning at all (it boasts the world's finest climate). No dealer franchises have been granted in this interesting and independent nation—which doesn't total more than five square miles in area.

Yet so intriguing is this spot, so strongly does it hold the imagination of people who have or have not been there, and so many men in the refrigeration industry have interrogated Editor George F. Taubeneck about Monaco and Monte Carlo since his return from his seven months' trip around the world, that it was decided to include his impressions of that wonderland in his travelog.

After studying the intricacies of roulette, and systems designed to break the bank, Editor Taubeneck is advising friends to do their crapshooting at home. Next week: Refrigeration in Italy.

Roulette and the Jesuits

The French claim that their celebrated mathematician, Pascal, invented roulette. He it was who promulgated the theory of probabilities, and roulette certainly would have been down his alley.

A prettier legend as to the origin of this deadly fascination, however, was told me in Monte Carlo. As related by the proprietor of a side-street restaurant, roulette was invented centuries ago in China (like almost everything else), and was brought to Monte Carlo by a Jesuit priest on his return from Mongolia.

At that time Monte Carlo was not a city; it was just the site of a monastery in the poverty-stricken little principality of Monaco. The peasants were penurious; the land did not favor abundant agriculture—it was too rocky and rolling. And the tithes barely kept the monks alive.

But one scholarly monk saw possibilities in this game. He studied it deeply; saw that the house couldn't lose, and yet the players could take chances ranging from 50-50 to 35-to-1. He had something there, he thought, and he took it to a restaurateur by the name of Blanc.

The first roulette wheel was set up in Monsieur Blanc's restaurant—on the same site, mine host averred, that I was then enjoying one of the four or five finest dinners of my life. Its fame spread. Royal patrons came from afar. Railroad lines were extended into Monaco. It became wealthy. The great Casino was built.

And the poverty-stricken little Jesuit monastery, high in the hills, so benefited from the enormous increase in tithe money that it was able to send religious emissaries to the hidden corners of the vast world.

* * *

Nosey Government

History, however, is not always so romantic as legend. The truth of the matter, it seems, is that Monsieur Blanc was already a highly successful operator of gambling casinos in Hamburg and Baden-Baden before he came into the Monte Carlo picture. German governmental regulation and restrictions became so annoysome, however, that he sought a site where he might have a free hand.

He found such a one in the little principality of Monaco which, hard-pressed for funds, having but scant territory for agriculture and practically no room or facilities for industry, had opened a casino in a small way.

Around 1863 Monsieur Blanc made a deal with the Prince of Monaco for untrammeled rights to operate a gambling casino in that tiny state. In return, the Prince and his descendants were to receive an annual "take" from the casino (which, by the end of this year, will have totaled five million dollars).

Already a casino existed on the "rock" of Monaco, one founded in 1856 by Prince Charles III, and "farmed out" to Lefebre & Co. These concessionnaires, already sick of trying to operate a gambling joint in what was then an almost inaccessible spot, gave up their rights for 1,700,000 francs.

Monsieur Blanc had a very fine name for his gambling concern: the Societe Anonyme des Bains de Mer et Cercle des Etrangers a Monaco—which, being translated briefly, means "Sea Bathing Club for Strangers to Monaco."

There does happen to be an excellent beach at Monte Carlo (remind us to mention it later). But Blanc's company was organized for the exploitation of roulette—and we'll take that up later, too.

Among the original stockholders in this "bathing society" was Pope Leo XIII. Within three decades the value of shares had risen more than 1,000%, the Blancs were rich, and the principality of Monaco became so prosperous that it has been able to maintain its independence ever since, despite its tiny size.

* * *

Tops in Beauty

Perhaps we err in thinking you might be interested in the story behind Monte Carlo, despite the truth that the very name seems to intrigue most Americans.

But the fact remains that, no matter what your opinion of gambling may be, roulette is responsible for making Monte Carlo perhaps the most beautiful spot on earth.

Some cities, notably Honolulu, are blessed with great natural charms. Others, like Paris and Budapest, are glorious because of the man-made works with which they have been endowed. Monte Carlo combines the quintessence of both.

From the natural viewpoint, Monte Carlo begins with two strikes on the beholder by virtue of its situation in the center of the Riviera (*Cote d'Azur* to the French), that bit of Hawaii transplanted by the gods to the French and Italian shores of the Mediterranean.

Only the Hawaiian Islands can contest the claims of the Riviera for the finest climate in the world, and the loveliest, most fragrant tropical vegetation. Only Bermuda can challenge the Riviera for the right to boast of the bluest skies and most limpid waters.

But no place can present an equivalent contrast of clean, sharp rock piercing the tropic foliage, daring the skies and defying the waters. And in the Riviera league, composed of Nice, Cannes, Juan-les-Pins, Menton, Villefranche, Beaulieu, Roquebrune, Cap Marin, and Monte Carlo, the last named is the undisputed champion. The rest of the Riviera has practically the same climate, the same strip of verdure between blue mountains and blue sea, the same palms and olive trees, orange and cypress groves, the same blue sky; but Monte Carlo has the highest batting average in the startling nature of its contrasts.

To this proudest boast of Nature's designers came Charles Garnier, architect, who in 1837 began the erection of the present Casino, the design of which influenced the remainder of the structures which followed into Monte Carlo.

Almost anywhere else on the globe the Casino would be considered a monstrosity. Set picturesquely among waving palm giants which frame its rococco marble and etch the sky, it tops a series of terraces which staircase, jigsaw fashion, to the sea. Seen from the rear, it is gorgeous. But from the front you get the idea that the architect must have drawn the plans in a padded cell. In any other city, without this build-up background, with its crazy wings, its nutsy cupolas (which perch on crazy places, and in confused profusion, as if some giant hand had tossed them up there) it would be condemned as a public nuisance.

As for style, best comparison we can make is to relate it to the facade and foyer of the super-ornate American movie palace, class of 1929.

But in Monte Carlo, where the extravagant contrasts left by nature leave you breathless anyhow, this frosted birthday cake of a marble palace seems fitting and proper.

Around every sudden corner of Monte Carlo—and they are all unexpected—is a stone building which tells the world that it was expensive in conception and construction. Perched atop every precipitous crag—and they are all geometrically explosive—is somebody's gleaming marble-and-tile villa. Sparkling from every jut at night is a necklace of mazda lamps, punctuated occasionally by a bracelet or tiara of brighter beams, plus the Casino stomacher of floodlights. By night, and especially underneath a full moon (which, by good fortune, favored my visit) Monte Carlo is the world's jewelbox.

Glorifying and enhancing all this gluttony of glamorous optical experience are the dazzling flower gardens—the cosmetics on the complexion of Monte Carlo.

Guarded by marching rows of palm trees, with marble fountains at strategic points, and bedded down upon a deep-pile carpet of continuous grass, the well-kept flower beds are like Persian rugs in the intricacy of their design and the thickness of their weaving.

Strolling up and down the curving nuances of the "streets" (which are but lanes between residences) of Monte Carlo, one catches glimpses through stone-and-spike of luxuriant private gardens which would impress even the Japanese.

Added to these delights are the magnificent automobile drives spoking out from Monte Carlo, particularly the sweeping corkscrew pike to Nice, whereon one may see some of the most breath-taking scenery this old earth affords.

Monaco is but a mile-and-a-quarter long, and its width ranges from a scant hundred yards to a good half mile. Yet in that snap-of-the-fingers mite of space is concentrated more genuine eye appeal than most huge nations have to offer throughout their domains.

And roulette paid for all the decorations.

* * *

No Winds, No Mosquitos

Aside from the absence of mosquitos (roulette, take another bow), the refusal of the winds to abandon the zephyrous stage is the strongest abettor of the climate in making Monte Carlo a delightful place in which to live.

Shielded from violent blows by a convenient mountain range, sunned upon 12 months in the year (the popular season is Christmas to Easter, but May, June, and July are even nicer), situated in the most temperate of locales, it is an ideal place for those who seek natural air conditioning.

Occasionally in the winter months there's a bit of a chill which discourages bathers from entering the magnificent open-air pool at the swimming club, but that is as rare as a sunny day in Indiana for the annual Elks' picnic.

Views from the villas which cling to the crags are magnificent as the villas themselves. And the cluster of castles on the promontory where the princely family resides would probably not trade locations with the most famous of the castles in Spain, on the Rhine, or in the Tyrol.

Does all this sound too rapturous? Would that I could write it more so!

* * *

How to Break the Bank At Monte Carlo

In a motion picture produced in Hollywood not so long ago, Ronald Coleman simulated that rarity, "The Man Who Broke the Bank at Monte Carlo." He accomplished the almost unheard-of feat by a method held in the lowest of esteem by veteran gamblers. He splurged.

To splurge at the roulette table is to commit an unpardonable sin in the European world of "affaires de chance." (That's the French expression.) Whoever does so brands himself, or herself, the greenest, most despicable of amateurs. It is daring, but *so* unscientific.

To return to Mr. Colman and his amazing performance. He broke the bank, yes . . . but later on the bank broke him. That's the way it always works with those winners who come back for more.

In the words of Monsieur Blanc, founder and proprietor of the Casino, "Rouge gagne quelque fois; noir aussi quelque fois — mais Blanc toujours." Translated, it means, "Red wins sometimes; black does too—but Blanc (French word for "white") always."

Almost every player at the roulette wheels of Monte Carlo has some sort of system he attempts to follow. It may be based on anything ranging from the signs of the Zodiac to the number of buttons down the back of the dress worn by the lady in the next chair.

And it is true that occasionally the system does reap fairly large profits. But such winnings invariably are short-lived. There has not yet been discovered a system that has assured a long run of success. In all probability such a system never will be discovered, but the management is ever on the alert to spot one just in case.

Before exposing some of the avowed systems employed with various degrees of success, it would perhaps be advisable to try to explain the workings of a roulette table at Monte Carlo.

The table itself is long and rectangular, and is covered with green cloth. Precisely in the center is the wheel, set in a circle. On each of the halves of the table is a *tableau* upon which are placed the bets.

Facing each other on either side of the wheel are two croupiers who alternate in spinning, calling for placements, and announcing winning numbers and colors.

At either end of the table is another croupier whose duty is to assist the players in placing their bets, and in raking in their winnings. He also rakes in the losses. It is to this croupier that the wary Scot referred when he cannily declared, "I'd like verra much tae play if it wasna for yon man wi' the rake."

When the board has been cleared of the last play, the "paying guests" place their bets, either currency or chips, on such number, color or space as they wish. Then the croupier spins the wheel in one direction, and throws the little ivory ball into it in the opposite course, at the same time saying, "Mesdames et Messieurs, faites vos jeux" (place your bets).

When the ball appears about to settle into one of the hollows at the bottom of the wheel, the croupier announces, "Rien n'va plus!" meaning "Too late to place bets!" The ball lodges in some niche, the men with the rakes clear the board, and all is ready for another play.

* * *

The Betting Combinations

The possible methods of placing bets are almost innumerable. The minimum on all plays is 10 francs, at present equivalent to 70 cents. You can put a stake on any number to win, and if that particular number should happen to turn up, you collect at the intriguing odds of 35 to 1.

This form of bet is called *en plein*, and the chances against winning are 36 to 1, the wheel ranging from zero to 36. *En plein* is by far the most daring play, and because of the large risk the amount for any one wager is limited to maximum of 180 francs ($12.60). (In America, roulette wheels have not only a 0, but a 00 also, so that chances against the gambler on

(*Concluded on Page 5, Column 1*)

The Casino—Where Everyone Tries His System—For a While

1. The Monte Carlo Casino, brilliantly lighted, presents an interesting spectacle at night. 2. Inside the Casino, the roulette tables are always crowded with both amateur and professional gamblers, whose one ambition is to "break the bank." 3. Rich man, poor man—everybody who plays roulette at Monte Carlo has a "system." The woman in the foreground is studying hers. 4. The harbor of Monte Carlo, snapped at long distance on a full-moon night. The two "forbidden" pictures in the center were snapped by Editor Taubeneck at the risk of a jail sentence (Monaco is an absolute autocracy) and under the noses of armed guards. Regular Monte Carlo visitors will recognize the croupier in picture 2—he has been there for 11 years.

(*Concluded from Page 4, Column 5*)

a single number become 37 to 0—thus increasing house percentage.)

Just half as hazardous as the *en plein* is the *a cheval*, in which play you set the stake on the line between two adjacent numbers, and collect at 17 to 1 if either is the winner. The maximum has been set at 360 francs ($25.20).

In a *transversale pleine* you include all three numbers of any of the 12 horizontal lines on the tableau and collect at odds of 11 to 1. Similar to this bet is the *transversale simple* covering two rows of three and paying off at 5 to 1. The maximum is 1,200 francs ($84.00).

Betting on a square of four numbers on the chance that one of them will be the winner is known as *en carre*, and reaps eight to one odds, 3,000 francs ($210.00) being the maximum. Also paying eight to one is the *quatre premiers*, in which you bet on the zero, one, two and three combination.

Zero is also playable with either one or two of its adjacent numerals, and wins with such placement pay at 17 to 1 and 11 to 1 respectively.

The most common wagers are the even-money chances, to make which you merely place your stakes on red, black, odd, even, first-eighteen or second eighteen. Almost as much played are the first, second and third dozens, a win on which pays off at two to one.

By just betting on a hit-or-miss method you really have equally as much chance of winning as does the bettor with a system. About all the latter generally has at the end of an evening's play that you haven't are a headache and shattered illusions.

By necessity every system arranged to assure profits must be fundamentally based on the principle of increasing stakes to retrieve past losses.

* * *

Choose Your System

The simplest system is the martingale. Supposing that you adopt one dollar as the unit of betting, you place a single unit on one of the even-chance *cadres*, either the black, red, odd, even, first-eighteen or second-eighteen.

If you win, you pocket the dollar from the bank and leave the original bet on the board. And as long as you continue to win, you don't alter the procedure.

But if you lose, you replace the vanished dollar with two units. Thus, if you win this time, you not only regain your lost dollar, but collect another as well. Then you return to betting single units.

If you lose the two dollar bet, you place four dollars on the board. A win on this and you return to single dollars; a loss and you place eight out on the *tableau*.

The idea is to keep on doubling your bet until you have recouped your losses, or until you have reached a point beyond which is seems rash to advance. Of course, with unlimited time and capital it would seem you couldn't lose by following the martingale system.

The "catch" to the martingale system is the fact that it requires at least a couple of million dollars stake to insure its success. And a man with that much money to gamble isn't going to waste so much time as the system usurps just to win a couple of hundred dollars a night—about the maximum which can be averaged.

An absurdly simple system is to try to find a fault in the wheel and play for it. Finding the fault, if any, is a tedious job that calls for long periods of vigilant observation, but once a fault is found the discoverer can quickly make up for lost time. That is, he used to be able to at Monte Carlo.

Several years ago, a studious chap arrived at the conclusion that one of the wheels in the casino was slightly off balance, and that this slight list caused the ball to drop into whatever numbers were at the bottom of the tilt when the wheel stopped.

Accordingly, he would withhold his bet until the wheel was almost at standstill, and just as the croupier would open his mouth to call "Rien n'va plus!" he would plant his stake on a combination that included about four divisions favored by the tilt. And he won consistently.

The proprietors, quite worried, moved the wheel to different tables every day, but the chap had spotted a marking on it that enabled him to distinguish that particular wheel from any other. He simply followed it around and kept on winning.

Finally the wheel was tested for accuracy, and the tilt was discovered. Since then the roulette wheels have been tested with an alcohol level every morning, and it is seldom that a wheel remains in the same table two days running.

Another system is to play for the law of averages. Most of the players mark down the winning number and its color for every spin they watch. Then, if for example, red has won three of four times in a row, they bet on black to turn up, figuring that red has run out its "natural" string.

The same holds true for odd and even numbers, for first-eighteen and second-eighteen. Playing for the law of a averages is risky business when it comes to the individual numbers themselves, for if a certain number has come up consecutively for two or three spins and is about due to be passed up according to the law, there are 36 other numbers waiting for their turns to be favored by Dame Fortune.

* * *

The Cockeyed System

One of the commonest systems is that based on the indefinite workings of the human brain known as the hunch. Hunches are as numerous and as variant as the people that beget them. They spring from almost any source, and shoot off branches like a cracked window.

If a fellow has had two cocktails and a highball just before coming to the gaming tables, he is smitten with a hunch that three would be a lucky number and promptly bets on it. Then his mind dwells on the two-one combination, and the following results are by no means impossible:

The figures two and one put together form 21;

So he bets on 21.

21 is red, hence a wager on that color.

It is also an odd number.

It is also in the second-eighteen.

It is also in the middle-dozen.

2 cocktails and 1 highball total 3 drinks; he's already bet on number 3, but since it is red, odd, in the first-eighteen, in the first-dozen, etc., he'll bet each of these variations. When the 3 drinks get together and make him see double, he plants a wager on 33 which, is black, odd, in the third-dozen and the second-eighteen. Then he looks up and sees 2 croupiers, 2 chandeliers, 2 wheels, 2 tables, and is amazed that everybody is twins; so he pushes his 2 piles of chips onto 2222, hollers at the 2 croupiers to spin the wheels, gets dizzier trying to watch both of the little balls whirl around the wheels, and gently fades into oblivion.

There is a system practiced by those people who, knowing their own weakness, realize that if they play themselves they will undoubtedly resort to splurging. These folk, then, hire someone, usually a stranger, to bet for them in any way they may choose.

With the prospect of a percentage of the winnings in addition to the stipulated fee rousing Old Man Greed in them, the hired bettors sometimes make shrewd, conservative plays and reap a profit during an evening's run.

Yet another system designed to break the bank is the corporation method. Three players band together with a common capital, and each takes one of the dozens to play. Taking one-third of the funds, each player concentrates on his twelve numbers and proceeds with the martingale system.

All three keep tabs on the standing of the corporation, and when they agree that they have made either a large enough haul, or too severe a loss, they cease play for the evening and settle up their accounts.

With the corporation method, provided the "human element" in each member is sufficiently suppressed, profits are more frequent than losses. However, as with most systems, a very large capital is invariably necessary, and an unlimited capacity for patience is a prime requisite.

Now comes the chase. This system is employed by the nomadic player who wanders from table to table pursuing his lucky number. The latter may be three, seven, 13, 17, or any other of the 36 on the wheel. Let's suppose it is seven.

The player (call him "Water" because that's a pretty good chaser) kibitzes at one roulette table after another in the search for number seven. Over the shoulders of players seated around the tables he glances at the tally-books.

If his seven is conspicious by its absence during a number of recent plays, Water pauses to lay a bet on it there. The theory is that, according to the law of averages, it should be about due to turn up.

If, on the other hand, number seven has been coming up fairly consistently in the past 20 plays or so, it is an indication that it is "on a run," and Water bets for it to show again.

If seven has been in the winning column neither very often nor seldom, Water moves on to another table. He doesn't win very often, but the few times he does win recompense him handsomely.

For instance, suppose that he has made five dollars his unit stake, and that he bets a total of $150 during the evening. That means he makes 30 wagers.

On the thirtieth play he wins. The bet, being an *en plein*, pays at the odds of 35 to 1. Thus, on a $5.00 stake, he makes $175.00. Subtracting his losses, he has made a clear profit of $25.00, which is not for you or me to sneeze at as an evening's winnings.

Just imagine the profit he would make if he chanced to be on a lucky streak, if he hit seven about five times out of thirty. And suppose he made higher stakes, as he probably would providing he had ample resources.

Of course, Mr. Water doesn't have to bet *en plein*. If he is of a conservative mien, he will bet on seven not as a number in itself but as one of the first-eighteen, or as one of the first-dozen, or as an odd number or as a red. Perhaps he may choose to include it in a *transversale pleine* or *transversale simple;* perhaps *en carre* or *a cheval*.

By so doing he lowers the odds, it is true, but he also increases his chances of winning and would probably wind up just as much to the good as would by straight betting on number seven.

One of the most-used "attack" systems, as they are known, is that in which the run is played for. The player sits at the table, lets the first spin go, notices the winning color, and, on the next play, stakes on that same color.

If he wins, he continues with the same color; if he loses, he also plays it again. But, if, on the second turn, he loses again he switches over to the other color.

The principle of this system is that more often than not a color will show consistently for a few spins, and that the wisest play is to wager on that color to maintain its run.

* * *

Even Astrology May Help!

According to Count Hamon, the "Cheiro" of astrology, palmistry and numerology renown, the game of roulette is founded on astrological knowledge, and can be successfully played by numerological calculation.

It is Cheiro's contention that the roulette wheel, with its 36 numbers and zero, represents the earth's Zodiac which has 360 degrees. The four seasons of the year and the four cardinal points of the Zodiac are represented in the four-spoked frame by which the croupier spins the wheel.

As for the tableau, all 12 horizontal columns of numbers when added, and when the digits of the totals are added, come to six, and adding the digits of the sums of the three vertical columns results in three, six and nine respectively from left to right. To the numerologist these numbers indicate something or other.

The 18th verse of the 13th chapter of the Book of Revelations reads:

"Here is wisdom. Let him that hath understanding count the number of the beast: for it is the number of man; and his number is six hundred three score and six."

There you have a Biblical allusion to a flock of sixes, and adding the digits of 666 results in 18 which in turn results in nine, the symbol of earth and of man.

All of which, the astrologers would have you believe, indicates that roulette is not merely a game of chance, but is somehow mixed up in the mysterious powers of the occult world around us. Maybe it's a relative of the Ouija board.

A system which seldom fails to win, but which depends upon unlimited capital—that bugaboo of almost all systems—is the long paroli. By paroli is meant the leaving of both stake and winnings on the board for a repeat win.

In the "long paroli" the chips are left for 15 spins, thus giving an extra good chance for two consecutive wins. Naturally, with such an opportunity the odds are bound to be less.

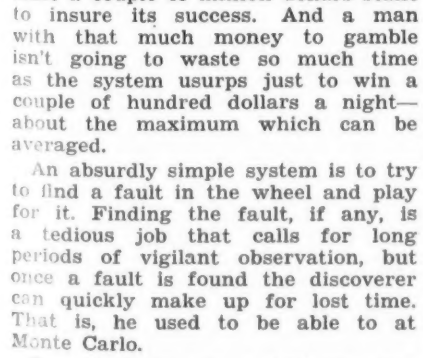
Chief reason why roulette is so profitable to operators of big casinos like Monte Carlo is an odd quirk of human nature: winners quit, and losers keep on playing.

If a man wins a small sum, he generally quits before his winning streak has had its run. If he is losing, he plays the losing streak out to its bitter end, getting in deeper and deeper.

Gambling profits, then, are based on two premises: psychology of the gambler, and the tendency of winning or losing numbers to turn up in sequences.

To come right down to it, there is really only one way in which it is possible to break the bank at Monte Carlo. That is to bet the maximum on an *en plein* every time, have the almost absolutely impossible good fortune to win every time, and keep on playing until there is no more money left in the house except in your own hoard of winnings.

And that, as Big Jim Farley said when asked why he didn't crowd Maine and Vermont into the Democratic bag, is expecting a little too much.



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Fifteen Common Sales Resistance Factors Listed, Together with Methods of Overcoming Them

"Handling Objections and Closing More Sales," Volume 3 of "The Knack of Selling More" (in three volumes). Author: Burton Bigelow. Publisher: McGraw-Hill Book Co., Inc., New York City. Pages: 245. Price: $2. (Set of three books: $4.) Review by T. T. Quinn.

"THERE ought to be a law," Mr. Bigelow says, "forbidding a salesman, even the seasoned veteran, to go out into his territory with a new line until after his house has given him a list of the 10 most frequent objections, with suggestions on handling them."

Why? Because nothing so unnerves a man in advance as the fear that the tough prospect will pull an unexpected objection on him; an objection to which he has no well-planned reply.

But the salesmen who digs out every weak point about his product, and rehearses every objection, will have no fears; more than that, he will soon acquire the habit of meeting objections before they are raised.

Three Things to Do

The salesman aiming at this goal of objectionless interviews, says the author, will need to observe three things:

1. Tell the complete story—don't cut corners to save time. Give the prospect plenty of information.

2. Make your meaning clear. Test the prospect's understanding as you go along.

3. Discover, analyze, classify, and work out the answers to objections—in advance.

Every objection ever made by a prospect can be "pigeonholed"—put in a definite class—the author contends. To prove it, he lists what he calls the "15 basic resisters," and gives several methods of handling them.

The Fifteen 'Resisters'

Here are the "resisters":

1. Contentment. "We don't want one." "My old one is good enough." "I can borrow (rent) one." The prospect is satisfied with his present method, equipment, or situation.

2. Habit. "We always by a Buick." (Brand habit). "We never buy from peddlers." (Store habit).

3. Ignorance. Prospects don't usually confess this; the salesman must observe for himself.

4. Unbelief. A few prospects may confess doubt, but most of them will keep it under cover. Here again, it's the salesman's problem to observe.

5. Competition. Easy to recognize, although it takes many forms and may sometimes even remain undisclosed.

6. Reciprocity and Friendship Competition. A relative is in the business; or "I could give you the order if your company were buying from us."

7. Pre-use Burden. "We would have to build an addition to our back porch to accomodate this refrigerator." "How much will you allow me for my old ice box?" The burden of inconvenience, discomfort, or extra expenditure of money necessary in connection with the purchase.

The Money Objection

8. Price and Cost. "I haven't the money." "I can't afford it." "It costs too much." "I can get a So-and-So cheaper." Requires special care to avoid misleading.

9. Product Complaint. "Too complicated." "Too new." "I hear your refrigerator uses a lot of current." May refer to general type of product or particular product, or both. Thorough knowledge of product is required to handle this objection.

10. Mean Disposition. The hard-to-handle prospect, in general.

11. Premature Exit. "I want to think it over." "See me in the fall." "I'll buy later." Calculated to ease out the salesman without any decision being made by the prospect.

12. Split Exit. "I want to talk this over with my wife (or husband)." The prospect who wants to get rid of the salesman pleasantly and quickly.

13. Time. This has two aspects: lack of time to see or listen to the salesman's story; wrong season or time of the year. Samples: "I haven't time to see you today." "We don't want to buy until Spring."

14. Fears of Buying. Many aspects, some of which are: Money fears; Product fears; Fear of others; Order-blank fears. "I may lose my job and not be able to make payments." "It may not work out the way you say." "My wife says we don't need one." "I never sign orders or contracts."

15. Misconduct. This group includes those errors of conduct and judgement which good salesmen naturally avoid.

How to Meet 'Resisters'

How to meet these "resisters"? The author lists eight methods. First, he says, hear the objection, and determine whether it is sincere, a test, or a fake. Then handle it according to one these methods:

1. Anticipate it. An objection answered in advance loses its power to slow up a sale.

2. Agree with the prospect. This is the principle back of the "Yes, but"—answer.

3. Postpone the answer, if it interrupts an important sequence in the sales talk—but don't use this strategy to ease out of a tight spot or evade giving an answer; it undermines the prospect's confidence.

4. Interrogate the prospect. One of the most useful—and widely used—objection handlers. It takes the salesman off witness stand, puts the prospect on it; it forces the prospect to defend his own position.

5. Offset the objection with a compensating advantage. No product has every advantage. To admit a disadvantage and then offset it with a compensating advantage is good objection-handling strategy.

6. Capitalize the objection, The John H. Patterson system—"Hit him right back with the hammer he hands you!" Know your answers; otherwise you'll merely have the "hammer" in your hand, without knowing what to do with it.

7. Ignore the objection, yes—often this is the best way to handle them.

8. Deny the objection. Don't always agree with the prospect. Sometimes a good forceful denial, with proof to back it up, is the best possible way to handle an objection.

Specific Examples

What is your meanest "resister"? Price? Pre-use burden? Cranky prospect? Reciprocity competition? The author tells how top-notch salesmen meet all of these. Here are some examples:

Price: "When you are selling to a prospect who has not decided to make the expenditure which you propose, there is no fixed relation between the *amount* of the proposed expenditure and the *number* and *intensity* of the objections to spending. Objections will be practically as numerous and almost as intense if the amount of the proposed expenditure is not even disclosed.

"The successful salesman postpones the price only until he has enough facts in the prospect's mind to enable him to make an effective values comparison. Then let the price come out."

Cranky prospects: "No man is so big or powerful or snappy or ugly that you need to be afraid of him. Nine chances in 10 his attitude is a pose; he is arming himself against you and is secretly watching for its effect on you.

"If you let his attitude fluster, or embrass, or frighten you, if you yield one inch to him, he is running the interview just as much as if he took charge of the talking."

An interesting section of the book is devoted to the use of visual aids in selling. Some sales aids, the author says, "are the work of mahogany-desk men who never rang a doorbell or closed a sale in their lives." Salesmen don't like them. As a consequence, even the worthwhile tools are misused or neglected.

Sales tools do not make selling easier, but they do make it a lot more effective, the author says. With this in mind, the good salesman will drill himself relentlessly in the use of these sales aids before he tries to use them regularly on his prospects.

"Sell one prospect at a time" is another bit of Mr. Bigelow's advice. "Prospects can be *thought about* in the mass—by hundreds—but you have got to get the orders, one by one, from individuals!

"When you call on a prospect at 2 p.m., why not say: 'This fellow is the only man I need to think about for an hour. Until 3 p.m., I haven't any other prospect I need to see. I'll just step in here and give him both barrels'."

And, as a final admonition:

"When you go out to make a sales call, expect to get an order.

"If something stands between you and that expectation, ask yourself what it is. Is it ignorance of your product? Then inform yourself. Is it ignorance of what your product will do? Then dig in and find out before you go. Is it ignorance of the prospect, or ignorance of what he is going to do with your product after he gets it? Then start digging for facts, and don't make the call until you get them!

Celebrating Cooper Day

R. Cooper Jr. (standing, center of group), Chicago General Electric distributor, smiles as reports show sales of $200,000 on "Cooper Day."

* * *

Chicago G-E Dealers Celebrate Cooper Day With Sales of $200,000 in 24 Hours

CHICAGO—Dealers in the R. Cooper Jr. General Electric distributorship celebrated "Cooper Day" on Oct. 23 by delivering more than $200,000 in business in a 24-hour campaign, the largest one-day sales total in the company's history.

The campaign proper was prefaced by a full-page color advertisement in the *Chicago Sunday Tribune* of Oct. 17, offering the G-E "Dictionary of Food" to prospects who would call at the distributor's showroom to obtain it. Purpose of the ad was to obtain as many prospects as possible for "Cooper Day" sales.

The Packard sedan to be presented by G-E to the leading distributor in its "President of Refrigerania" campaign was offered by Distributor Cooper to the salesmen making most sales during the day, if the day's sales enabled Cooper to go "over the top" in the national drive. Only dealers selling G-E exclusively were eligible for this reward.

On the day of the campaign, telephone sales conferences were held from Cooper headquarters with the 110 dealers who were taking part. Speakers including Mr. Cooper, A. M. Sweeney of General Electric Co., Wholesale Manager Parish, and Sales Promotion Manager Sam Nides.

For Cooper's five Chicago stores, a special telephone conference was arranged at 7 a.m. on the day of the drive. This included talks by Mr. Cooper, Mr. Sweeney, and Retail Sales Manager Meilinger.

At noon, a special phone conference was held with all of Cooper's non-selling employes, including those in the general office and accounting departments. All non-selling employes spent the day calling friends, relatives, and acquaintances, making appointments for Cooper salesmen to call later in the day.

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Get the Old Appliance Out, Advises F. D. Cramer, or the Hard-Pressed Customer May Go Back to It

By Phil B. Redeker

HARRISBURG, Pa.—"Get those old refrigerators out of there!"

That's the credo of F. D. Cramer who runs the Commonwealth Electric Shop, Copeland household electric refrigerator dealership here. And it explains why nearly 80% of his sales this year have involved trade-ins of either ice boxes or outmoded electric refrigerators.

Mr. Cramer's reasoning is simple yet fundamental. He points out:

"Most refrigerators are purchased on terms. If you left the old means of refrigeration in the purchaser's home there might come a time, shortly after the purchase, when the new user might become somewhat hard pressed and say to himself: 'Let 'em come and take it away, I've still got my old refrigerator."

The Harrisburg dealer says this lesson was impressed upon him by a star vacuum cleaner salesman. This salesman had been sent down from Pittsburgh to give Mr. Cramer some pointers on vacuum cleaner merchandising and also assist him in doing some "cold canvass" selling.

"We worked opposite sides of the same city block," relates Mr. Cramer, "and while walking along my side of the street I saw the star salesman coming out of a house on the opposite side carrying an old-style sweeper. I crossed over and asked him what he was doing with the wornout sweeper.

"'Never leave an old sweeper in a house where you made a sale,' was his reply. 'They might be tempted to think at some early date that they could get along with the old stand-by.'"

Trade-ins for Any Business

To Mr. Cramer's way of thinking, once trade-ins became established as a matter of accepted practice, there's nothing for the dealer to do about it except to make the best of the situation. If some shoe dealers, for example, started the custom of trade-ins in the retail shoe business he believes that all shoe dealers eventually would have to take up the practice. And if Mr. Cramer were in the retail shoe business, he says, he'd probably start trading shoes.

Trade-ins don't of necessity mean a diminution of profits, Mr. Cramer opines. Principal thing the retailer must do is to keep his list prices high enough so that he can give an attractive trade-in value without cutting into his profit too greatly.

"The customer doesn't respect a price cutter," points out the Harrisburg retailer. "If you begin to slice the list price he begins to get suspicious, first as to whether the merchandise is worth as much as it ought to be, and second if he's getting as much knocked off the price as the next fellow.

"If you stick to the established price but allow the prospect to do a little trading on his old refrigerator or ice-box, you're in a much better position. If you can get the prospect to thinking that he's gained a little edge on the trade, he feels a lot better than if he'd forced a price cut, and you've probably come out better on the deal."

Mr. Cramer hasn't had much trouble getting rid of the stock which he takes in trade. Some he has sold for as high as $25. There are a few, of course, that are practically worthless.

In selling, Mr. Cramer is a firm believer in "telling the truth" to prospective purchasers.

"You don't gain anything by misrepresenting the product by making absurd claims for it," he declares. "And if you tell the prospect that there may be times when the unit won't operate satisfactorily, what the causes of failure to operate properly may be, he'll have a lot more confidence in you than if you had painted too rosy a picture."

Misrepresentation Gains Nothing

In Mr. Cramer's "truth telling" about possible failure of the unit is a story that is competitive to types of mechanical refrigeration other than the open, conventional unit.

Explaining that about all that ever goes wrong with an open-type conventional unit is one of three things —seal, motor control, or refrigerant control—Mr. Cramer makes a point of the fact that repair or adjustment of these three parts is a relatively inexpensive matter, but makes the point that on other types of electric or gas refrigerators there can be causes for failure to operate which are costly to fix.

Mr. Cramer has a service man, but does some service work himself. When he first took on refrigerators he vowed he would never even learn how an electric refrigerator runs, but necessity made him learn more about it until now he can make most repairs that don't require shop work. Mr. Cramer doesn't regret having learned how to service machines now; he finds it keeps him in more intimate contact with his users, and helps to build more sales.

Chase Heads Metals Research Group

NEW YORK CITY—F. S. Chase, president of Chase Brass & Copper Co., Inc. was elected president of Copper & Brass Research Association at the organization's 15th annual meeting here recently.

The following auxiliary officers were elected: vice presidents, John A. Coe, president of American Brass Co.; C. D. Dallas, president of Revere Copper & Brass, Inc.; and Wylie Brown, president of Phelps Dodge Copper Products Corp.; treasurer, C. D. Dallas; secretary, Bertram B. Coddle.

Elected to the executive committee were: J. A. Doucett, Revere Copper & Brass, Inc.; R. L. Coe, Chase Brass & Copper Co.; John A. Coe, Jr., American Brass Co.; Mr. Brown; W. M. Goss, Scovill Mfg. Co.; and H. W. Steinkraus, Bridgeport Brass Co.

The board of directors elected include the officers, executive committee members, and the following: R. E. Day, Bridgeport Brass Co.; E. O. Goss, Scovill Mfg. Co.; J. P. Lally, C. G. Hussey & Co.; C. C. Limbocker, Wolverine Tube Co.; H. A. Staples, Phelps Dodge Copper Products Corp.; and F. L. Riggin, Mueller Brass Co.

Youngholm Made V. P. Of Westinghouse

NEW YORK CITY — David S. Youngholm was elected vice president of Westinghouse Electric & Mfg. Co. at the last meeting of the board of directors. He will make his headquarters here.

Mr. Youngholm joined the Westinghouse organization 27 years ago. His first position was in the engineering department of the Westinghouse Lamp Co., after which he entered the sales department.

In 1924 he was placed in charge of production of Westinghouse Lamp Co., with headquarters at Bloomfield. A year later he became assistant manager of sales. In 1927 he was made assistant general superintendent of the company, and in 1930 became assistant to vice president. Later he was named vice president of the same organization, the position he held until his election as vice president of Westinghouse Electric & Mfg. Co.

Material Available for Housewares Week

NEW YORK CITY — Three-color display posters, newspaper mats, news releases, and mail stickers are being made available to retailers of electric household appliances for use in promoting the second national Electrical Housewares Week, to be held Dec. 5 to 12.

Retail merchants may obtain any of this special advertising material from distributors or contributing manufacturers. Sponsors will assist merchandisers in tying-in individual sales-building activities by placing at their disposal the services of their advertising department.

Westinghouse Enrolls Employes in 6-Week Sales Campaign

EAST PITTSBURGH—With their goal the sale of at least one electrical appliance each, more than 34,800 employes in 15 cities where plants of Westinghouse Electric & Mfg. Co. are located began a six weeks' "Golden Jubilee Sell-Ebration" Oct. 19 in an effort to obtain approximately $2,000,000 worth of additional business this year.

The campaign, a grand finale to Westinghouse's fiftieth anniversary year, is designed not only to increase the company's sales, but also to acquaint employes' friends and neighbors with the "Golden Jubilee" line of household electrical appliances.

Under the supervision of Campaign Manager C. B. Auel, every employe has been assigned to a team, managed by a captain and lieutenants, who in turn are supervised by department managers.

Westinghouse executives have the same rating as any other employe in this "Sell-Ebration," and will personally sell appliances during the campaign.

Lindsay Sails on Survey Of West Indies Markets

CINCINNATI—A. G. Lindsay, manager of the foreign division of Crosley Radio Corp., left recently on an extended tour of the West Indies to inspect the trade situation and make a survey of the market for radios, refrigerators, and washing machines.

Mr. Lindsay will visit Cuba, Haiti, Santo Domingo, Puerto Rica, Jamaica and other islands. He will travel both by plane and boat.

Square D Reports Net Profit of $252,768

DETROIT—Square D Co., for the quarter ended Sept. 30, reported a net profit of $252,768, after deduction of interest charges and federal income taxes, equal after preferred dividend requirements, to 84 cents a share on 220,650 shares of common stock.

This compares with a net profit in the preceding quarter of $218,823, equal to 68 cents a share on common stock, and a net profit, in the same quarter of last year, of $179,320, or 51 cents a share.

For the 12 months ended Sept. 30, the company reported a net profit of $872,061, equal to $2.72 a share on common stock. This compares with a dividend of $1.48 a share for the year ended Sept. 30, 1935, at which time the net profit was $596,162.

Home Laundry Sales Hit New All-Time Sales Peak

CHICAGO—Sales of domestic washing and ironing machines so far this year have already surpassed the all-time high established in 1935, reports J. R. Bohnen, secretary of the American Washing Machine Manufacturers' Association.

Total washing machine sales for the first nine months of the current year reached 1,379,062, and shipments in the opening days of October, as yet unreported, pushed the figure past the 1935 record of 1,413,761, according to Mr. Bohnen.

The domestic ironer total for the first nine months of 1936 showed a 25% gain over the corresponding 1935 period, Mr. Bohnen said.

BRUNNER

Send for the New

REFRIGERATION CATALOG

Eight Models of Compressors

Forty-one Models of Highsides

from 1/6 H. P. to 15 H. P.

BRUNNER MANUFACTURING CO.

UTICA, N. Y.

AERO

Here's Why the SELF-ALIGNING SEALS are the Best!

POSITIVE SEAL!

This step in the seal cup* makes the "Aeropack" (DUPRENE) synthetic rubber gland ring form a gas-tight lock around the compressor shaft

NO "RUN IN" NECESSARY!!

The concave face in the seal* makes the "Aerolyte" bronze bushing seat and seal immediately. The longer the wear the better the seal

SELF-ALIGNING !!!

The copper diaphragm bushing plate* that holds the "Aerolyte" bronze bushing is fundamentally a new self-aligning principle in compression seals

EVERY SEAL GUARANTEED

* THESE FEATURES ARE ALL COVERED UNDER U.S. PATENT GRANTED OCT. 1, 1936 AND OTHER PATENTS APP. FOR

AERO PRODUCTS CORPORATION

36-08-34th St., Long Island City, New York

COPPER REFRIGERATOR TUBES are Unusually SOFT

....Easy to bend and flare

Anaconda Copper Refrigerator Tubes have exactly the qualities you need to give the best value in installation jobs.

These quality tubes are *exceptionally soft.* They lend themselves to easy bending and may be *flared without cracking.* They are thoroughly dehydrated to free them from moisture on the inside and the ends are sealed to keep them dry. And, even though they are made of 99.9% pure copper, they are specially deoxidized to increase their corrosion-resistance.

Anaconda Copper Refrigerator Tubes are manufactured according to A.S.T.M. specification B68-33 by methods which assure *unusually bright, clean inside surfaces.* They come to you absolutely free from chips and dirt.

Anaconda Copper Refrigerator Tubes meet the leading manufacturers' specifications for tubes to be used in installation work. They are carried in stock by leading Refrigerator Parts Distributors.

ANACONDA

REFRIGERATOR TUBES

Anaconda Copper Refrigerator Tubes are wrapped in moisture-resistant paper which protects the finish of the tube.

Cutaway view of inside of tube. The inside surface is bright and clean—no dirt, no chips.

ANACONDA

36419

FRENCH SMALL TUBE *Branch*

THE AMERICAN BRASS COMPANY · *General Offices:* WATERBURY, CONNECTICUT

AIR CONDITIONING AND REFRIGERATION NEWS

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Air Conditioning To Develop New Dealer Body

CONCENSUS of opinion among a number of the leading chief executives among air-conditioning manufacturers is that the successful merchandising of air-conditioning equipment will eventually develop an entirely new type of distributing organization.

As told to the editor of the NEWS during the course of a series of conversations relative to merchandising trends in this lusty infant industry, several men entrusted with the direction of sales for air-conditioning makers have come independently to the conclusion that the type of dealers originally sought by manufacturers are—with a few signal exceptions—getting the industry nowhere.

For the last two years financial men have been puzzled by the failure of air-conditioning sales to show greater increases. Inventors, financial services, market tipsters, and professional economists have interrogated the editorial staff of the NEWS frequently on this point.

Why, they want to know, when initial public acceptance has been so extraordinarily high, when some of the finest engineers and production men in the nation have been devoting all their time and energies to the problems of design and manufacturing of air-conditioning equipment, and when a number of the mightiest corporations in the world have been promoting and selling air conditioning, hasn't the industry grown out of its swaddling clothes?

As matters stand today, air conditioning is not only a comparatively small industry, but it isn't half so large as the most conservative observers have predicted it would be by this time. What's the trouble? Can't the engineers get air conditioning out of the laboratory? "No," answer the manufacturers, "air conditioning is here."

Well, then, conclude the puzzled and disappointed ones, there must be something wrong with the selling technique. Certainly the *promotion* has been successful. As a matter of fact, they generally add, the public has sold itself without a great deal of promotion.

That the average air-conditioning dealer is the bottle neck which is impeding more rapid growth of the industry is admitted by most major executives. But, they explain, that is really the fault neither of the dealer nor of the man who enfranchised him.

The truth of the matter is that the type of merchandising organization ideally suited to push air conditioning did not exist when the industry came into being. Only now is this special variety of dealer beginning to evolve.

From the outset air-conditioning manufacturers were confronted with a two-horned dilemma. Prospective dealers were either "all back and no front," or "all front and no back." That is, they were either engineering and installing organizations, with no display room and sales force "up front," or else they were specialty selling organizations with all the "front" one could ask, but with inadequate engineering talent in the "back" rooms.

On which type of organization to choose, the industry divided into three camps. Carrier, the leading manufacturer, placed its fortunes in the hands of specialty selling distributors, furnishing each franchise with factory-trained engineers. Others relied entirely upon plumbers and steamfitters, the heating and ventilating trade. A few tried outlets of both descriptions.

In defense of their choice of the plumber type of dealer—the one whose merchandising experience was limited largely to the display of a lacquered unit heater, a rack of plastic soap holders, and a colored toilet fixture in a dusty front window of an old building on a back street, manufacturers declared that only experienced ventilating engineers could be entrusted with installations.

What would they gain, they reasoned, if they sold a hundred air-conditioning jobs in one city, but found thirty of them to be unsatisfactorily installed? Customer satisfaction is all-important during the first days of an industry, and rather than take a chance on an aggressive sales organization putting jobs into the field it was not equipped to handle, some manufacturers chose to go the slow route.

The time has come, however, when a number of manufacturing executives — and stockholders — are beginning to get impatient. They want some results. And they are asking: "Why is it not possible for a strong specialty selling organization to *acquire* the necessary engineering talent?"

The answer is that a few outstandingly active and aggressive specialty distributors have done just that thing. But there is still another missing ingredient. In addition to merchandising brains and engineering talent, the air-conditioning dealership must have at its head a thoroughgoing business man who understands *costs*.

Selling air-conditioning installations is a far different matter from selling a "package article" like a refrigerator or washing machine. All too often, factory representatives find, air-conditioning dealers do not have an adequate knowledge of their costs. Either they quote prices so high that prospective customers are scared away, or they underbid in a competitive market, and at the end of the season find themselves so short of funds that they are unable to lay the groundwork for a successful next season.

Gradually, a new type of outlet is growing up to meet the requirements of air-conditioning distribution. Founded on specialty salesmanship, backed by an adequate engineering staff, this new type of outlet is invariably headed by a sound business man who has had long experience in running a small business of his own, making both ends meet down through a period of years.

For organizations of this nature, the sky is the limit in the air-conditioning business. And lucky is the manufacturer who can find representatives of this type of merchandiser for his key distribution points.

"Quoted"

Atmospheric Alibi

WHEN you come down to the office on a dark, gloomy, smoky morning, and find yourself irritable and your efficiency low, don't blame it on high blood pressure.

The real cause of your affliction may be nothing more than the depressive effect of air pollution.

At any rate that's the opinion of the managing director of the Air Hygiene Foundation in Pittsburgh, who has been studying various aspects of air contamination.

Smoke and industrial dust and fumes that fill the air and shut out the sun, are, according to this authority, responsible for irritability and a reduced standard of production.

"The average citizen will find that his annual expenses are increased by reason of the smoke, dust, and gases in the atmosphere; that his bills for cleaning and painting are higher than he thinks they should be; that vegetation is hampered in its growth; that some of the sunlight to which he is entitled is cut off and fogs are intensified so that at times he must burn artificial lights until noon, or even all day on occasion."

"A chimney in every town and smoke in every chimney," was, and still is, a commendable ambition for an industrialized country, but too much smoke in the air is a horse of another color—*Detroit Free Press.*

Letters

Why We Cannot Authorize Reprints from the News

Southern California Gas Co.
950 South Broadway, Los Angeles

Editor:

May we have permission to reproduce by photo-litho process 1,000 copies of the entire first page of the Sept. 2, 1936, issue of REFRIGERATION NEWS?

We are interested in the figures on the cost of operation of electric refrigerators and desire to give copies to our salesmen and dealers.

DOUGLAS BUCKLER, Supervisor of Advertising and Publications.

Answer: There are a number of good reasons to support our opinion that it is not desirable for us to grant permission to others to reprint copyrighted material from the pages of AIR CONDITIONING AND REFRIGERATION NEWS.

On account of the highly competitive conditions in the industry, there is a marked tendency to use extracts from the editorial columns of the NEWS in ways which are misleading to the public.

Obviously we cannot condone such practices. In order to prevent certain improper uses of our material, it has become necessary for us to adopt measures to protect our own interest and the interest of the industry as a whole.

Our policy is to refuse all requests for blanket permission to reprint from the columns of the NEWS. We make it a practice to be liberal in granting requests to reprint when such requests come from responsible publications, but we are definitely opposed to the reprinting of our material by non-publishers and in forms which are not definitely identifiable as to their source.

In making these restrictions we are well aware that most trade papers are not only willing, but delighted, to have anything reprinted from their columns. This apparent liberality is easily traceable to a complex which constantly worries most trade-paper publishers. It is a fear that their paper is *not being read*, even by its subscribers.

In contrast, the NEWS has never been bothered by that problem. The editors of the NEWS have had plenty of troubles, goodness knows, but they do not have to make any surveys to find out whether the paper is being read.

The high degree of reader interest in the NEWS, and the confidence of subscribers to the paper, may be accounted for very easily by examining the editorial policies of the paper. These policies represent a radical departure from the usual trade paper practice.

The policy of the NEWS is to give information, to report what happens, to give the facts regardless of whether the news is good or bad, without fear or favor.

As a result of such policies, the NEWS has become widely known as a reliable and unprejudiced source of information and is therefore frequently quoted as an authority.

The subscription records of the NEWS supply convincing evidence that the service of the paper is widely appreciated.

We believe that the regular readers of the NEWS will get a good clear picture of the industry as it actually is. That picture is not distorted by exaggerating the good news and suppressing the bad. In particular, the NEWS makes no effort to dazzle dealers into thinking that the business is full of easy profit. That all advertised equipment works perfectly, that every new invention is a bonanza, that competition is negligible, or that the public is clamoring to buy.

It should be easy to understand, however, that specific articles clipped from the NEWS may easily give a one-sided impression. Selected headlines telling about sales records and profits tell only a part of the story. The complete paper also tells about losses, bankruptcies, price wars, inventories, service problems, and other difficulties.

Referring to the article on the front page of the Sept. 2 issue which has attracted so much attention, it is obvious that the published data may be subjected to many abuses. We believe that the industry was entitled to know the details about that important government order for a large quantity of refrigerators, but we also know that the tabulation of figures showing the prices and performance guarantees of various competitive manufacturers will have little meaning to anyone who does not fully understand the conditions under which these figures were submitted by the manufacturers to the government.

Certainly it will be misleading to the public, if anyone uses this information to create the impression that comparative tests were made *by the government*. Certainly it will be misleading to the public if anyone asserts that these tests were made by, or approved by, the NEWS.

Full information has been given to the readers of the NEWS regarding this million-dollar order placed by the government. Fair warning is given that if we learn of improper use being made of the data published in the NEWS, full information will also be published regarding such activity.

Jordan Book to Be Published Next Year

Refrigeration Engineering, Inc.
Manufacturers—Distributors
"Recold" evaporators, "Humid Air" Conditioners
6101 South Central Ave.
Los Angeles, Calif.

Editor:

We are following with a great deal of interest your articles as published from "Air Conditioning Made Easy" by F. O. Jordan.

The data contained seems to be so well gotten up and in such clear understandable English, that we would like to secure if possible one of the master manuals for our reference files. If you have these manuals for sale, please forward one to us or perhaps pass this request on to Mr. Jordan.

We thank you in advance for your cooperation and assure you of our ever increasing interest in your REFRIGERATION NEWS. H. T. JARVIS

Answer: AIR CONDITIONING MADE EASY, by F. O. Jordan will be published in book form in 1937, although we cannot set a definite date at the present time. Watch the NEWS for announcement of the date.

Specifications Book Ratings Desired

Venco, Inc.
Heating-Ventilating and Air Conditioning Engineers, Sheet Metal Work
Greensboro, N. C.

Editor:

Please send us one copy of your book REFRIGERATION AND AIR CONDITIONING SPECIFICATIONS. We have for some time had quite a little trouble in one of competitors over-rating Compressors to secure jobs and we are anxious to have a book showing ratings for all lines of compressors in order that we may have an even chance to meet our friend's smart tricks for the present.

You can well guess how much money will be made after making two or three changes when he finds out his machines are not doing what he claims.

The refrigeration men here in North Carolina are not organized and practically anything but cold blooded murder can take place at a letting.

D. A. WICKER

Wants a Hundred-Dollar Air Conditioner

California Frostoff Co.
Refrigeration Engineers
339 Fifteenth St.
Oakland, Calif.

Editor:

We are interested in securing a salable air conditioning unit that can be sold to homes and small business places. This unit must be in a "less than a hundred dollar class" and one that is manufactured on efficient performance. We have a sales organization and are in a position to act as sole distributor for California, Oregon and Washington.

Can you suggest a company that would be interested in our offer?

T. HOWE WAGNER,
Manager

Correction on Founding Of Mercier & Clark

Mercier & Clark, Inc.
Refrigerator Service
6523 Grand River Ave., Detroit
Nov. 7, 1936.

Mr. F. M. Cockrell:

In your recent issue of Nov. 4 on page one there is an article pertaining to the appointment of E. A. Mayrend as sales engineer for the Mills Novelty Co. I would like to call your attention to paragraph three which states that Mr. Mayrend organized the firm of Mercier & Clark, Inc. This is not true as you will see from the following information.

The corporation name of Mercier & Clark was so chosen because Mr. Clark and the writer were the engineers. We added Mr. Mayrend to our company because we needed a bookkeeper and secretary and treasurer. For these reasons, he was taken in as a member of the firm. Therefore, it is natural to assume that if he organized the company his name would have been used.

Would you be kind enough to publish this letter or a statement making the necessary corrections.

W. F. MERCIER, President.

One Answer to the Trailer Refrigeration Problem

The Coolerator Co.
Duluth, Minn.

Gentlemen:

On page 16 of the Oct. 28 issue, you give a manufacturer the names of manufacturers in a position to furnish refrigeration for trailers.

We build two models of Coolerators that are particularly fitted for this purpose, and if you will give us the inquirer's name or if you will send him our name so that we may get in touch with him we will be glad to furnish complete information.

The Coolerator works out particularly well for this purpose because in traveling through the country it is always an easy matter to secure ice and the low cost of the units make them particularly suitable for installations of this kind.

J. H. GANZER,
Vice President

Measuring the Goodwill Of an Ice Business

Samuel T. Freeman & Co.
Auctioneers and Appraisers
1808 Chestnut St., Philadelphia, Pa.
November 4, 1936.

To the Editor:

Will you kindly forward us any literature or a copy of your issue which will show the number of electric refrigerators now in use in the United States, and any information in reference to the present status of the manufactured and natural ice business.

This statistical information is desired by us in order to evaluate, as accurately as we can, the Goodwill of an ice business.

It was suggested by the agency of the Frigidaire Corp. here in Philadelphia, that this data could be secured from you.

If there is any charge for this information, we will be glad to forward you our check.

SAMUEL T. FREEMAN & CO.

Need a Service Man In South Africa?

I wish to get in connection with a refrigerator company in Capetown or Johannesburg, South Africa, for a position as serviceman.

I can talk English, German, and some Portuguese. I have learned the machinist trade in Germany and worked for the last 10 years in installation and servicing electric refrigerators. Also been able to construct new, and remodel and improve old refrigerators, ammonia, sulphur, and Freon. I'm married. Wife and I can leave any time. Have at least $1,000 saving.—Frank Graupner, 6248 Market St., Philadelphia, Pa.

Air Conditioning

Five Large Conditioning Installations, Two Air-Circulation Jobs on Lines Of Pawtucket Utility

PAWTUCKET, R. I.—Five commercial air-conditioning systems and two commercial air-circulation systems are in operation in the territory of Blackstone Valley Gas & Electric Co.

Largest of the air-conditioning installations is in the New York Lace Store, retailer of women's dresses, where 200,000 cu. ft. of air is fully cooled, circulated, filtered, and partially dehumidified by a combined York and Carrier system.

The original 50-hp. York brine installation, using three 2-hp. blowers to circulate air through the ducts, later was supplemented by a Carrier system using two water-cooled compressors of 10 hp. and 3 hp., and a 2-hp. blower. Cooling water is discharged on the roof.

Originally designed to provide a 16° F. temperature reduction with doors shut, later tests showed an indoor temperature of 74° F. when outdoor temperature was 86° F.

Grant Store Conditioned

Second largest air-conditioning job was that installed in the local branch of the W. T. Grant Co. chain, 175,000 cu. ft. of air being cooled, circulated, filtered, and partially dehumidified by a Carrier Berkshire system. Nine 3-hp. compressors on the roof deliver cooled air to the duct system, through which it is circulated by two 3-hp. fans. Cooling water is discharged on the roof. Designed for 12° temperature reduction with doors shut, indoor temperature of the store tested at 70° F. while outdoor temperature was 80° F.

The other two conditioned retail stores are Kay Jewelry Co. and Melville Shoe Co. In the former, 30,000 cu. ft. of air is handled, and in the latter, 27,000 cu. ft. The conditioning accomplished is identical to that of the two installations previously described.

Frigidaire Unit in Jewelry

Frigidaire equipment was used in the jewelry store installation, the system consisting of two basement water-cooled compressors of 2-hp. and 3-hp. capacity, three overhead units in the store to which the brine is circulated, and ¼-hp. blowers to circulate the air. Though the system was designed for 15° F. temperature reduction with door open, the indoor temperature registered 72° F. while outdoor temperature was 83° F.

In the Melville Shoe Co. a 5-hp. York compressor delivers cooled air to a three-duct system over the show windows. Air is circulated by a 2-hp. blower. Cooling water is discharged into the sink. The thermostat, located under a counter near the street door, is set to operate on 65° temperature.

Buffalo Forge equipment supplemented by a 7½-hp. General Electric compressor was used in the fifth installation, in Pawtucket Institute for Savings. Here 30,000 cu. ft. of air is heated, cooled, circulated, filtered, and partially dehumidified. Three fans, operated on a shaft by a 1½-hp. motor, change the air at the rate of 5,000 c.f.m.

Compensated temperature is controlled in the bank during summer by a Minneapolis-Honeywell thermostat; in winter by separate controls located in the lobby and the main section of the building. Fifty per cent relative humidity is maintained, with a 15° temperature variation.

Theater Installations

The air-circulation systems are located in theaters, and were installed prior to 1932. Both systems circulate and filter the air, cooling it only slightly during this process, and both introduce heat to the circulation system during the winter.

The Sturtevant system of the Leroy Theater circulates 1,287,000 cu. ft. air. Two 5-hp. fans operate continually in connection with the duct system. A 15-hp. blower is used with the water curtain, which washes the air, and another works on lobby blast. A 40-hp. blower is used to change the air.

Buffalo Forge equipment handles the 724,000 cu. ft. of air in the Strand Theater, with two 3-hp. fans working continually into the ducts. On hot days and for daily air change, a 40-hp. slow speed intake and 7½-hp. high speed exhauster are used. Lobby blast is provided by one 5-hp. blower.

Rowe Joins Trane Engineering Staff

LACROSSE, Wis.—William Rowe, formerly chief engineer for American Blower Corp., has joined the engineering staff of Trane Co. to take charge of fan engineering and the application of fans to the company's line of heating and cooling products, it was announced recently.

Mr. Rowe's experience in air engineering covers a period of more than 30 years, during which time his activities were divided between sales engineering and technical work.

He is a member of American Society of Heating and Ventilating Engineers' council and research committee, and has also served on many of the organization's code groups.

New Airtemp Unit

• • •

Airtemp Markets Flexible Unit

(*Concluded from Page 1, Column 4*)

provides for overhead distribution of air through a diffusion type grill at the top, and is capable of circulating 1,200 c.f.m.

An important advantage of the new unit, declares B. T. Moyer, president of Airtemp, is its flexibility of application. It can be located almost anywhere in the room without impairing its efficiency. Multiple installation is made practicable with one or more units to handle outside air, each unit operating separately.

The new unit can be adapted to a duct installation to care for the conditioning of several rooms, or single units may be used to supplement existing conditioning systems where addition of rooms or new departments necessitates additional cooling. There is provision also for bringing in outside air for ventilating purposes.

Being of a semi-portable nature, the unit may be moved from one building to another if the merchant decides to change his location, for only simple electrical and water connections are required.

Wholesale Shoe Company Conditions Main Office

ST. LOUIS—Wohl Shoe Co., one of the largest local shoe wholesalers, recently air conditioned the main business office of its eight-story building with Frick equipment.

The installation, made during the summer months, consisted of an FAW-315 Freon-12 unit with direct-current motor. Previously the office had been conditioned by a Type H 3 by 3 in. double Frick ammonia water-cooled unit.

In addition to the main office, several private executive offices are cooled by the new installation.

Air-Conditioning Equipment Sales Valued at $3,351,999 in Sept.

Item	Value of Orders Booked, 1936 September	Total, 9 Mos.
Total	**$3,351,999**	**$31,508,456**
Air Conditioning Group—Total	**1,040,647**	**14,506,414**
Unit Systems—		
Self-contained (shipped substantially complete)	75,940	1,819,489
Not self-contained (shipped in sections), including refrigerating or cooling medium	359,941	4,822,263
Central-station Systems, excluding installation if installed—Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	341,969	4,242,793
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	34,177	576,545
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available	94,218	1,651,829
Air washers, including pumps and motors and controls where furnished	36,217	556,179
Air filters (not including sales of filters used with machinery other than fans)	14,952	167,609
Humidifiers	83,506	669,707
Fan Group—Total	**$1,297,754**	**$10,596,843**
Fans, including bearings, pulleys or couplings, (if furnished)—		
For public and semi-public buildings	133,362	1,277,536
For general industrial uses	400,648	3,101,447
For mechanical draft	196,286	1,293,302
For jobber stocks and unknown uses	59,273	562,796
Small housed and propeller fans—Direct connected small housed blowers with motors and control (merchandise motors)	155,310	1,071,615
Propeller fans, direct connected and belted (for ventilation only)	284,428	2,588,116
Driving mechanism for general fan use (not reported above)—Electric motors and controllers (manufactured or jobbed)	62,102	622,215
Steam engines (manufactured or jobbed) / Steam turbines (manufactured or jobbed)	6,345	79,816
Unit Heater Group—Total	**$1,013,598**	**$ 6,405,198**
Industrial Type Unit Heaters, including heating element and motors where furnished—		
Equipped with blower-type (centrifugal) fans	129,316	923,917
Equipped with propeller-type fans	643,889	2,674,429
School-Room Type Unit Heaters, including heating element and motors and control where furnished	62,645	1,424,356
Indirect Heating Surface (not including unit heater surface)—		
Steel pipe coil type (manufactured or jobbed)	1,188	15,687
Cast iron type (manufactured or jobbed)	17,392	118,157
Copper or aluminum type (manufactured or jobbed)	159,168	1,248,652

*Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets, etc., as are sold with each.

Illinois ASHVE Discusses Reconstructing Sewers to Meet Conditioning Load

CHICAGO—Advisibility of reconstructing the Chicago sewer system, to take care of the increased burden on the city's downtown sewers caused by recent large air-conditioning installations, was discussed by Acting City Engineer Loran D. Gayton before the last meeting of the Illinois Chapter of American Society of Heating & Ventilating Engineers.

Rebuilding the "loop" sewer system, Mr. Gayton pointed out, would cost millions of dollars, inconvenience the public with torn up streets, and might meet with opposition from business interests.

"Second possible solution," he said, "is for those installing air conditioning to install cooling towers, evaporative condensers, or other devices so that the amount of water used would be reduced to a minimum."

Joint investigation by the city's bureau of engineering and Commonwealth Edison Co. has shown, he said, that while it would cost more to operate a 300-ton plant using a cooling tower, a plant of 900-ton size would operate for less, with cooling towers, than without.

Cooling towers or other water-saving devices would cut water consumption in the "loop" during warm weather from 1,600,000,0000 gallons to about 102,000,000 gallons, about 95%, Mr. Gayton said. It would also cut the city's revenue from water to about $7,000, from a present total of $111,000.

Since Chicago's water supply is practically unlimited, Mr. Gayton said it would be unnecessary to cut down its use, unless it were cheaper than to spend millions for a new sewer system.

SILENCE

M&E COMPRESSOR UNIT
325 M.C.
½ H.P. air cooled unit . . . 2 cylinder compressor . . . rugged, quiet, reasonably priced . . . an ideal unit for market coolers and walk-in cases.

M&E EST. 1866

Silence is truly "golden" in refrigeration compressors. For noise and vibration—not only objectionable in themselves—are unmistakable danger signals, warning of premature wear and trouble to come.

The smooth, hushed purr of M & E Compressors is the result of many years of experience, engineering skill and painstaking workmanship. For instance, in the manufacture of every M & E Compressor, a special "lapping-in" process is used, wherein after all parts have been carefully inspected and properly fitted, they are run-in by motive power with a special grinding compound. This insures that all parts are absolutely concentric with each other, with just sufficient clearance to allow a film of oil to lie between the working parts, assuring unusually effective lubrication and an absolute oil seal.

Another reason why M & E Compressors run more quietly, use less power, require less servicing, last many years longer. Why users and dealers, alike, turn to "M & E for the plus values in refrigeration."

•

There is an M & E Unit for every refrigeration need—45 Compressor models from ¼ h.p. to 15 h.p.; water or air cooled; electric motor or gas engine driven. Catalog on request.

MERCHANT & EVANS COMPANY
PHILADELPHIA, PA., U.S.A. • Plant at LANCASTER, PA.

MERCHANT & EVANS
COMMERCIAL COMPRESSORS

C. K. Nichols One of First Utility Men to Realize Importance of Domestic Electric Refrigerators

By Winifred B. Hughes

NEW YORK CITY—C. K. Nichols, present manager of the Technical Bureau, New York Edison Co., was one of the first men in the utility field to recognize the importance of domestic electric refrigerators in increasing power company loads. He also read one of the first papers presented on the subject at the Sales Managers' Association meeting in 1922.

"The manufacturers tried to put their equipment out before it was ready for use," Mr. Nichols explained.

"Then, because the units were uncertain and needed so much servicing, the boxes seemed impractical."

After the test data compiled in the 1925 NELA report established a set of standards the situation was altered. Thereafter, he said, none of the big utilities would merchandise refrigerators which did not measure up to the test qualifications.

First domestic box that Mr. Nichols ever saw was a small Isko model owned by some fruit vendor in the Hudson Terminal Building. The unit had an exposed compressor on top, surrounded by condenser coils.

"There were then two Iskos in the city, I remember, but I've forgotten where the other one was. I used to go down to the Terminal Building and watch the Isko, fascinatedly."

Mr. Nichols pointed out that where sales before 1925 represented only 75,000 unit sales, after the reading of the NELA report they took a terrific jump, and 1926 saw the sale of 210,000 units, a figure which was surpassed in each of the succeeding year's sales.

"The general acceptance of the domestic refrigerator after the NELA report was the one thing that gave the industry its great impetus," Mr. Nichols repeated.

Mr. Nichols, who lives in Ridgewood, N. J., was born Aug. 17, 1880. He is now manager of the Technical Bureau of the New York Edison Co. Back in 1922 when he presented his paper before the Sales Managers' Association, he was general agent, power, for the same company. He studied at both the Pratt Institute and at Brooklyn Polytechnic Institute.

The servicing problems connected with the earliest domestic refrigerators, says Mr. Nichols, were a menace which made them appear impractical to utility executives whose by-word was kilowatt-hour load. It took a series of explanatory papers, followed by a number of tests, and the establishment of a set of standard specifications for refrigerators before they got the promotional backing of the utilities. Before 1922 they still belonged in the curiosity class; they were a problematical luxury, and an expensive one.

Mr. Nichols' paper was followed by one presented by T. I. Jones of the Brooklyn Edison Co., before the 38th annual meeting of the Edison Illuminating Companies in 1922.

Upon Mr. Jones' recommendation, a committee was appointed to investigate domestic electric refrigeration. Mr. Nichols was a member of this committee, and was for several years chairman of it. When the new industry got on its feet, he moved that the committee be discontinued, since its work was already done.

The 1925 NELA report, with its complete discussion of domestic equipment, and its voluminous test material, was the beginning of the quickly-to-grow industry.

He is a member of American Society of Refrigerating Engineers, Edison Electric Institute, American Society of Heating and Ventilating Engineers, and the New York Edison Club. His published articles include reports read before various societies.

* * *

'Domestic Refrigeration'

By C. K. Nichols, The New York Edison Co., New York City
Sales Managers' Convention, Association Island, Henderson Harbor, N. Y.
July 24, 25, and 26, 1922

Editor's Note: This paper on "Domestic Refrigeration," first presented by C. K. Nichols of the New York Edison Co. before a meeting of the Sales Managers' Convention held at Association Island in 1922, is an important historic document.

It is printed now as an addition to background notes contained in the Tenth Anniversary and Product Development issues.

Household refrigeration is, in this country at least, almost universal. It is usually regarded as a necessary evil, and there most of us stop in our consideration of the matter. Few know anything about its principles except that "ice keeps things cold," but why is not known. This is shown by the vogue of "ice blankets" which save ice by preventing its melting. Questions of proper air circulation are generally unknown.

Now what are some of these facts. In melting one pound of ice to water at 32° F., 142.8 B.t.u. are absorbed from the surrounding air and the more rapidly the ice is melted the more rapidly heat is taken up. With the same conditions of box insulation the refrigerator that has the best circulation of air insures the most rapid melting and a lowest box temperature.

It is generally believed that the temperature of an ice refrigerator is low enough for proper refrigeration. Tests show that in general this is not the case. Some time ago, Professor A. M. Green made tests on nearly 250 domestic ice boxes and found the following temperatures:

14%	below 45° F.
27%	45° F. to 50° F.
51%	50° F. to 60° F.
8%	over 60° F.

Temperatures over 50° F. are too high to prevent bacteria development so that the usual ice box temperatures will only delay somewhat their rapid multiplication. For more than a month I have kept a recording thermometer in my own refrigerator and find that only infrequently has the temperature been below 50° F. The refrigerator is a normally good one, so I believe that the results I have obtained from this test represent general conditions pretty well.

Turning now to mechanical refrigeration, we find from tests that temperatures from 40° F. to 45° F. are maintained, and in addition to this the air in the box is kept dry and sanitary.

At present there are several machines on the market that have stood the test of practical use and are being operated successfully in hundreds of homes and we do not hesitate to fully recommend them. Among those having the widest distribution are the Kelvinator, the Frigidaire and the Lipman. The accompanying table shows the main features of those machines which are best known in the eastern territory. (See Table 1.)

Domestic machines have often been condemned on account of the fact that they sometimes require service. They do, but in this they do not differ from any other mechanical apparatus. The development and general use of the automobile has not been checked because the repair man is sometimes called on. It may be that our experience in New York has been particularly fortunate, for we have found that little service has been required, that is if the owner has not attempted to make adjustments himself. I have in mind one Kelvinator that has been operating continuously for three years, and the only call from the service man was to recharge it once in that time.

The field of use for the small electric refrigerating machine is large and every home where the income of the occupant is $3,000 a year or more may be considered a prospect for an installation. We will not consider here the use of these machines in anything but the home, but their use in offices, hospitals, laboratories and small shows where perishable goods must be kept, is quite large and increasing.

One of the most attractive opportunities for the use of these machines is found in apartment houses. By working with the owners and architects it has been found possible to secure in new apartment buildings the installation of a mechanical refrigerating unit in each apartment as a part of the permanent equipment.

Two typical examples of this apartment house installation are the Denifer Apartments in Chicago, where the owner has placed a Frigidaire in each kitchen, 37 in all, and the A. R. Cole Apartments in Ann Arbor, Mich.

A recent estimate made for a New York apartment house shows the following comparison in cost. In this case it was found that the increased consumption due to the refrigerating machines would bring the building under a wholesale rate, thus reducing the total kwh. cost for the entire building. Rates in other cities may be on a different basis, but where reductions are made in the kwh. rate on account of increased consumption a lower kwh. charge is earned or where the apartment house rates include a demand element the rate will be reduced on account of the better load factor. (See Table 2.)

Table 2—Estimate on Comparative Cost

Present cost of electricity per year for light and elevators:	
52,600 kwh. at .074	$3,892.40
Present cost of ice for 96 apartments	3,822.00
Deterioration of refrigerators	192.00
Ceiling repairs	150.00
Total cost of light, power & ice	**$8,656.40**
Cost of light, power, and refrigeration at wholesale rate:	
Kwh. refrigeration 53,655	
Total kwh. required 106,255	
First 75,000 kwh. at .05	$3,750.00
31,255 kwh. at .04	1,250.00
106,225 kwh. at .004	425.02
Deterioration at 10%	2,303.00
Average annual interest on $23,030 @ 6%	731.79
	$8,459.81
Annual saving	196.59

Plus 80% better refrigeration, plus interest on annual savings, plus the machines.

Table 1—Features of 1922 Refrigerators

KELVINATOR

Model	Cubic Contents	Hp.	No. of Trays	Price
06	6	1/6	1	$235.00
610	6-10	1/6	2	265.00
1014	10-14	1/6	2	290.00
1420	14-20	1/4	3	340.00
2030	20-30	1/4	3	390.00
3040	30-40	1/4	3	435.00
4055	40-55	2 of 1/6	..	600.00
5508	55-80	2 of 1/6 at least	..	750.00

Above prices do not include electrical wiring on box.
Refrigerant—Sulphur dioxide (SO_2).
Air cooled.
Compressor—Reciprocating.
Brine tank included.

* * *

PRIGIDAIRE

Model	Cubic Contents	Hp.	No. of Trays	Price F.O.B. Dayton	Cu. Ft. Water Per Day	Remarks
B-R	..	..	..	$295.00	.....	(For installing in other refrigerators)
B-5	5	..	2	495.00	.....	(Includes box)
B-9	9	1/4	3	595.00	10-20	(Includes box)
B-15	15	1/4	3	775.00	20-30	(Includes box)

Above prices don't include electric wiring or plumbing.
Refrigerant—Sulphur dioxide (SO_2).
Water cooled.
Compressor—Two cylinder, reciprocating.
Brine tank included.

* * *

WILLIAMS SIMPLEX

Model	Hp.	No. of Trays	Price F.O.B. Brooklyn Including Refrigerator
44"x25"x60"	1/4	6	$550.00

Price does not include installation.
Refrigerant—Ethyl chloride (C_2H_5Cl).
Air cooled.
Compressor—Rotary.
Brine tank included.

* * *

AUDIFFREN

Model	Cooling Capacity Cu. Ft. Per Hour	Hp.	Price Installed (Approx.)
1/5 ton	8	1/4 compressor 1/2 brine pump	$1,700.00

Price does not include refrigerator.
Refrigerant—Sulphur dioxide (SO_2).
Water cooled.
Compressor—Twin piston.
Brine circulating system.

* * *

LIPMAN

Model	Motor	Price
No. 25	Probably 1/4	.....

Capacity—Equivalent to 200 lbs. cooling per 24 hours.
Refrigerant—Ammonia (NH_3).
Direct expansion.
Compressor—Reciprocating.
Water cooled.

Table 3—Cost of Operation

	Ice Box 6-10 Cu. Ft.	Kelvinator 6-10 Cu. Ft.	Frigidaire 9 Cu. Ft.
Cost of box	$100	$100	$595*
Cost of machine		265	
Total	**$100**	**$365**	**$595**
Depreciation	$ 10	$29.20	$47.60†
Interest 6%	6	21.90	35.70
Cost of operation‡	160	60.00	60.00
Total cost	**$176**	**$111.10**	**$143.30**

*Cost of both.
†Doesn't include installation.
‡Ice 60¢ per 100 lbs., electricity 5¢ per kwh.

For the single unit installations Table 3 shows a comparison as we figure it between the cost of operation of two of the best known machines and ice.

The cost of condensing water has not been included. Those machines requiring water for this purpose consume from 15 to 30 cu. ft. per day depending on temperature.

In New York we have made a systematic effort in the past two years to secure this business, and in that time over 500 machines have been installed in the Metropolitan district, a large part of them being supplied with energy from our lines or from those of affiliated companies.

A little over a year ago, we gave a refrigerating exhibition in one of our show rooms and advertised it rather widely in the daily papers. We included in this several of the small commercial machines as well as the domestic. The interest created by this advertising was surprising and during the week probably 6,000 people visited the show room and careful record was kept of the results. The table was made directly after the show, and we have since been informed that a good number of those listed as prospects were sold. (See Table 4.)

The response to this show demon-

(*Concluded on Page 11, Column 1*)

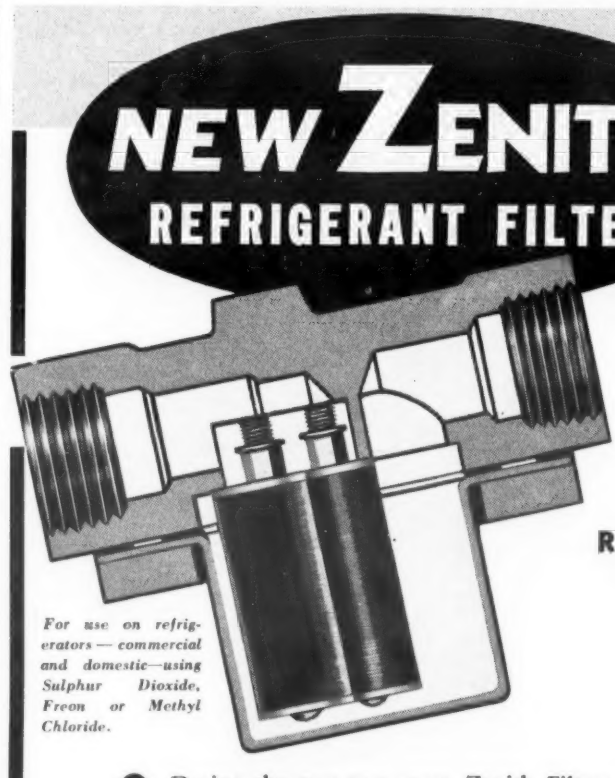
Do YOU know the Answers?

Count 20 points each for the correct answers to the following questions. Can you score 80? Don't look now, but the answers are on page 16.

1. Annie Oakley was famous for her:
   Tap dancing — Attacks on the saloon
   Accuracy in shooting — Beautiful voice
2. The first electric car was designed in:
   Paris — Bournemouth, England
   Detroit — Des Moines, Iowa
3. What is the size range of Bundyweld Tubing?
4. A cachelot is a:
   Roman chariot — 18th century band instrument
   Sea-going mammal — Antarctic duck
5. The Guano Islands off South America are famous as:
   A pirates' hangout — A naval coaling station
   A source of fertilizer — Home of fine cigars

The Answer to Your Tubing Problem is
BUNDY TUBING
BUNDY TUBING CO. . . DETROIT

NEW ZENITH REFRIGERANT FILTER



For use on refrigerators — commercial and domestic—using Sulphur Dioxide, Freon or Methyl Chloride.

A NEW SOURCE OF PROFIT for REFRIGERATION PARTS DEALERS!

● During the past two years Zenith Filters have proved their value and efficiency in thousands of commercial installations. Better performance, greater economy, minimum service and better satisfied customers are the results leading commercial refrigeration manufacturers and service engineers have experienced.

The time-tested and proved Zenith Filter is now available to the recognized jobbing trade.

These Zenith Refrigerant Filters have the following outstanding features: patented element—easily and quickly cleaned—easy to install—insure positive protection from dirt in the refrigerant liquid—are corrosion proof, leak-proof, and have ample capacity.

A full line of sizes for every need. Jobbers are now being appointed. Write for further information.

See the Zenith Refrigerant Filters at the Jobbers' Convention in Memphis Nov. 11th.

ZENITH CARBURETOR CO.
Subsidiary
BENDIX AVIATION CORP.
Detroit Michigan

Table 4—Prospects Listed at 1921 Utility Show

April 4-9, 1921	Clothel Sales	Clothel Pros.	Prigidaire Sales	Prigidaire Pros.	Prigidor Sales	Prigidor Pros.	Isko Sales	Isko Pros.
Monday	..	5	..	..	..	12	..	4
Tuesday	..	8	1	16	..	12	..	5
Wednesday	..	6	1	8	..	12	..	4
Thursday	..	5	2	40	..	12	..	6
Friday	..	6	1	50	..	11	..	7
Saturday	..	15	4	50	..	15	..	8
Total	..	**45**	**9**	**164**	..	**74**	..	**34**

	Kelvinator Sales	Kelvinator Pros.	Norwalk Sales	Norwalk Pros.	Simplex Sales	Simplex Pros.	Total Sales	Total Pros.
Monday	..	10	..	3	..	..	..	34
Tuesday	..	6	..	3	..	..	1	51
Wednesday	..	5	..	3	..	..	1	38
Thursday	1	10	..	6	..	5	3	84
Friday	..	45	..	6	..	1	1	126
Saturday	..	16	..	4	..	2	4	110
Total	**1**	**92**	..	**25**	..	**8**	**10**	**443**

C. K. Nichols Foresaw Utility Profits in Refrigeration

(*Concluded from Page 10, Column 5*)

strated the interest of our customers in mechanical refrigeration, for when suggested, the idea is immediately popular.

We carry on our campaign for this business throughout the entire year and although it is to some extent seasonal, it requires the entire time of one man and at certain seasons, two men, to take care of inquiries. Although the percentage of the number of sales to the number of inquiries is not large, we feel that we are accomplishing very good work that is certain of later bearing fruit.

We have not attempted to circularize every home in the city for the price of the machines is still relatively high, but have selected certain sections consisting of the best type of residences. From these sections we made up a mailing list of about four thousand names and have confined our efforts among them.

As a revenue producer it would be difficult to find one better than domestic refrigeration. At our refrigeration rate with a maximum of 5 cents per kwh. the return averages about $240 per hp. of installed capacity per year. This is based on ¼-hp. motors on the machines.

Compare this with the electric range which is also a very valuable load. A range of 5 kwh. capacity will each year consume about 1500 kwh. and at the same rate will yield a revenue of $75 per year or $11.25 per hp. of capacity annually.

One hundred kwhs. per month is a good average of consumption of the refrigerating machine under conditions as we find them in New York and at a five-cent rate a month bill of five dollars is certainly not too great and probably somewhat less than the average ice bill.

We have found, however, that the cost of operation is not, when within reasonable limits, a very important consideration, and a very low special rate for energy to attract this business is not at all necessary in order to compete with ice.

At the present time, the greatest difficulty encountered is the first cost of the apparatus, but as production increases and development costs are written off this price is bound to be materially reduced. The service question will always be with us, but as the use of the machine becomes more widespread, this matter will be greatly simplified.

Now that machines have passed the experimental stage and may be safely recommended, every manager interested in further sale of energy should get in touch with the leading manufacturers, go over their proposition, thoroughly study the different outfits, and then by advertising and display be able to create a local demand of surprising importance.

Enameling Process to Be Demonstrated at Show

CHICAGO—The second in a series of demonstrations before trade groups showing how porcelain enamel is fused on metal will be conducted under the auspices of Porcelain Enamel Institute during the National House Furnishings Show at the Stevens hotel, Jan. 10-16.

Central feature of the Institute's exhibit will be a miniature porcelain enameling furnace heated to 1560° F., in which souvenir ash trays are fired. Another display will show the advantages of a porcelain enamel finish.

Dealers Combine with Utility to Build Model Home

FAIRMONT, Pa.—Electrically up-to-the-minute is the model home opened here recently, through the cooperation of Monongahela West Penn Power Co. and a group of local merchants.

Featured in the all-electric kitchen is a Hotpoint range complete with Telechron timer, broiler, warming drawer, thrift cooker, and three surface units.

The kitchen also has a Frigidaire refrigerator, a Hamilton-Beach mixer, Westinghouse roaster, General Electric coffee maker, toaster, and sandwich grill. A G-E kitchen ventilating fan circulates and freshens the air.

An American Beauty iron augments the Easy washer and ironer with which the laundry is equipped. In the reception room is a Toastmaster hospitality tray. Stromberg-Carlson radios are located in the living room, recreation room, kitchen, and each of the three bedrooms.

Heat is supplied by a Bryant gas furnace, and a winter air-conditioning system operates in conjunction with this furnace to supply warm, filtered, and humidified air to every room of the home. This same conditioning system ventilates the house in summer.

Utility Finds Good Field In Small Apartments

MUNCIE, Ind.—Concentrating on the small apartment house field, the Central Indiana Gas Co., in this town of 45,000 people, has sold more than 50 Electrolux gas refrigerators this year. There are but 22,000 residential meters in the town.

E. G. Peabody, general sales manager of the company, reports that during the first six months of this year the utility sold and installed Electrolux refrigerators to 1% of its domestic customers. This figure represents an increase of 174% over the same period of 1935.

The small apartments, built to meet the acute housing shortage in Muncie, are in most cases remodeled residences. Sales to them average five or six units each, Mr. Peabody says.

32 of Morley Staff Awarded Trip to S-W Convention

DETROIT—Thirty-two members of the sales organization of Morley Bros., Michigan Stewart-Warner distributor, were awarded trips to the Stewart-Warner convention Oct. 29 and 30 in the Drake hotel, Chicago, for selling $1,500 or more of merchandise in a recent six weeks' radio contest.

Headed by Carl C. Crandall, appliance sales manager of the company's Detroit branch, the crew of Morley men from this city included Lewis Marks, Harry Lee, and Brad Corbin. Saginaw delegates are L. E. Buetow, manager, appliance division; D. W. Uphoff, Otto Schultz, and F. E. Waters. Those from Grand Rapids were Charles Puehl, manager; Art Stuyter, and Harry Richards.

Dealers and sales who made the trip are: Grand Rapids district—H. F. Cole, of the H. F. Cole, Inc.; John Goldsmith, of Young & Chaffe Co.

Flint district—S. Greenley, Greenley & Sons; Roy Martin, Malcolm Music House; E. Bouchard, Bouchard Appliance Co.; Clifford Proctor, Proctor Bros.; Jack Baker, Wilhelm & Baker Co.; F. W. Boswell, Boswell Maytag Co.

Detroit district — Irving Raimi, Raimi Bros.; Milt Enell, Rosedale Appliance Shops; A. Benjamin, Benjamin, Appliance Shop; Carl Hesse, Harold Fink, Hesse Bros.; L. R. Richard, M. Friedman, Nome Refrigerator Co.; Joe Nutto, Crowley-Milner department store; D. Fink, Dave's Radio Shop, Hamtramck; J. Fink, Port Huron, Appliance Co.; Walter Logan, Logan Bros., Lincoln Park; J. E. Furtney, Shaefer Hardware, Ypsilanti; D. Gathman, Gathman Sales, Jackson.

Customer Tips Bring 90% of Dealer's Sales

NORTH LITTLE ROCK, Ark.—Approximately 90% of refrigerator sales made by Grover Myers Co., here, result from contacts submitted by the shop's customers.

For nine years Grover Myers' customers have been working for him—and apparently liking it.

A small prize of some kind is offered all customers who will report prospects to the shop by telephone, if the prospects eventually buy refrigerators. Prizes range in value from 50 cents to $1.50, and are awarded after the sale has been made.

Calls often run as high as 10 a day, including the combined refrigerator-radio field. As each one comes in, the prospect's name is checked against the office contact file, and duplicates eliminated.

Each customer is told of the arrangement at the time he buys a refrigerator. This system, Mr. Myers claims, not only increases the contact list, but also retains the interest of the shop's past and present customers.

Indiana Newspaper Celebrates Completion Of Rural Line with 32-Page Tabloid

LEBANON, Ind.—Celebrating the completion of 160 miles of rural electric distribution line in Boone County, Ind., the *Lebanon Reporter* published a 32-page tabloid supplement devoted exclusively to rural electrification and the range of electrical uses it makes possible.

The sponsor of the project, the Boone County Rural Electric Membership Corp., was the first cooperative to build rural lines using REA funds. When completed, its project, for which $567,926 has been apportioned by REA, will serve 2,200 farms from 587 miles of line. Service is being provided to more than 500 farms over the first 160-mile section. Bids for constructing the second unit, 330 miles, are being received.

Publication of the special section was done in response to many requests from subscribers and residents of the community for more information regarding the use of electrical appliances, according to Jesse M. Batterton, the paper's business manager.

Original plans called for the publication of 7,000 copies, but so many requests came in that the edition finally reached 8,657 copies. The issue carried 18,522 lines of advertising, and was the largest in the publication's 45-year history. Al. H. Wynekoop is managing editor, and Louis J. Kiefer, advertising manager.

What the electrification project would mean to the county, in added conveniences, was outlined in an advertisement by Public Service Company of Indiana, which read, in part:

"Tonight electric lights will blaze from farmhouse windows where for years the only illumination has been the feeble glow of kerosene lamps . . .

"Food preserved fresh and pure in electric refrigerators will be cooked perfectly and easily on electric ranges . . .

"Electricity will pump a plentiful supply of water into modern bathrooms . . .

"Dozens of other modern conveniences will be enjoyed in Boone County, because of that great boon—Electricity . . ."

The issue contained articles on the uses of various electrical appliances for the house and farm, a history of the Boone County rural electrification project, and general articles on the aims and requirements of REA.

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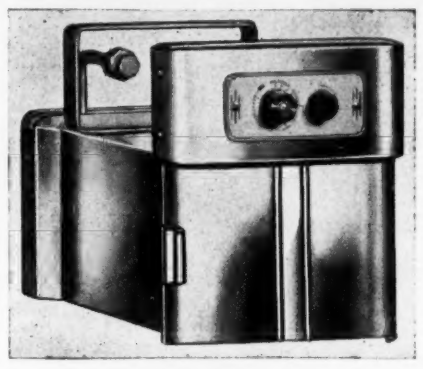

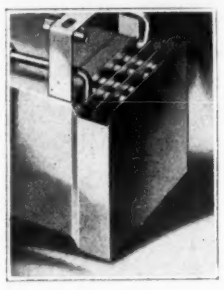

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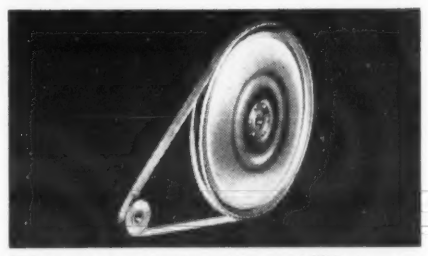

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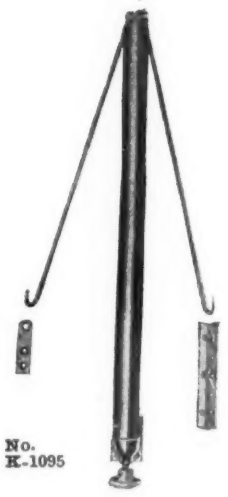

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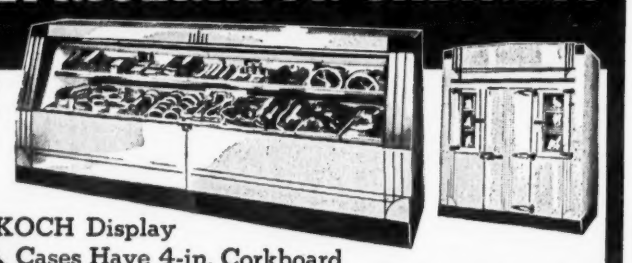

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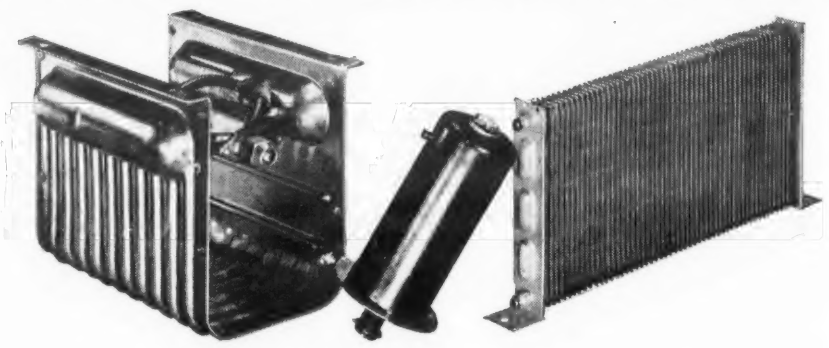

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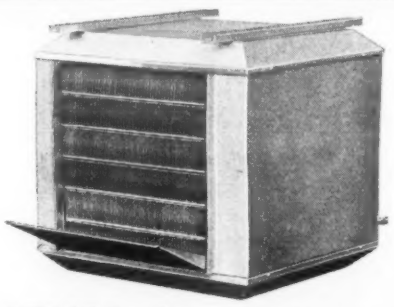

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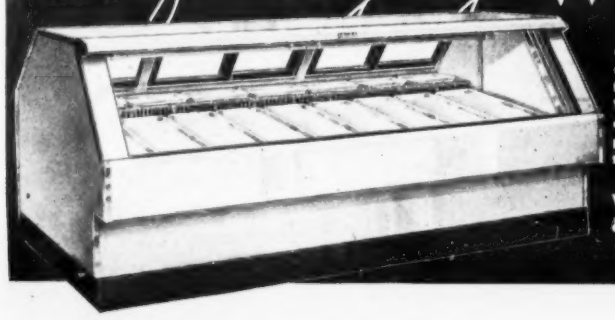

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Air Conditioning Made Easy

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Purposes and Operation of Air-Conditioning Controls

SECTION NO. 6

The Complete Air Conditioning System For the Cooling Season

Controls

The controls for the system shown in Fig. 1 can be described as follows:

There are two controls which operate upon the supply of liquid refrigerant to the air-conditioning coil: first, the room thermostat (1) operating the liquid line solenoid valve (7), and, second, the thermostatic expansion valve (6).

Purpose of the room thermostat and solenoid valve control is to admit liquid refrigerant to the air-conditioning coil, thus allowing the system to operate when the room dry bulb temperature is above the desired level.

Purpose of the thermostatic expansion valve is to limit the amount of liquid refrigerant supplied to the air-conditioning coil to that necessary to maintain the coil at a practically flooded condition.

When the compressor (15) is out of operation and the room temperature rises above the setting of the thermostat (1), the thermostat closes the electrical control circuit, lifting the liquid line solenoid valve (7) from its seat and allowing refrigerant to flow from the condenser (16), through the liquid refrigerant line (9), into the air-conditioning coil (2).

The gas resulting from the evaporation of the liquid refrigerant quickly raises the "low-side" pressure, caushigh and low pressure control (13) to ing the low pressure element of the close the control circuit to the starter (14) for the compressor motor, placing the condensing unit in operation.

Operation of Thermostat

When the room temperature is reduced below the setting of the thermostat, the thermostat opens the control circuit to the liquid line solenoid valve, allowing it to close and shut off the supply of liquid refrigerant to the air-conditioning coil.

Since the compressor is in operation, the "low-side" pressure is soon pumped down to a point where the pressure control opens the control circuit to the starter for the condensing unit motor, thus stopping the condensing unit.

Another method of accomplishing the control described above is to omit the liquid line solenoid valve and connect the thermostat directly into the control circuit to the starter for the compressor motor, so that upon a rising room temperature, the thermostat closes the control circuit to the starter, thus starting the compressor without the intermediate assistance of a liquid line solenoid valve.

A disadvantage of this method is that it usually causes the compressor to "cycle" much more frequently due to "flutter" of a sensitive thermostat when set with a small differential, or to influences of brief duration, which, if a liquid line solenoid valve were used, would merely open the solenoid valve and quickly close it again before sufficient refrigerant to actuate the pressure control, and so to start the compressor, could be allowed to enter the "low side."

Another disadvantage of omitting the solenoid valve is that the refrigerant is allowed to remain in the "low side" system where its pressure soon rises to the saturation pressure corresponding to room temperature, with a resultant greater danger of leaks, greater strains upon gauges and other equipment, and heavier starting load upon the compressor motor.

Oil "slugging" sometimes occurs also upon the starting of the compressor when the system has not been "pumped down." The slight advantage of simplicity due to the omission of the solenoid valve is negligible as the small solenoid valve is inexpensive and trouble-free.

The thermostatic expansion valve consists of the valve body proper (6), a capillary tube, and the sensitive bulb (5). When liquid refrigerant passes out of the direct expansion coil into the suction line (8), and reaches the location of the sensitive bulb, the bulb is cooled by the more rapid transmission of heat from the inside of the suction line to the liquid refrigerant. This cooling action contracts the liquid charge within the bulb, and this action is transmitted through the capillary tube to the valve (6), causing the valve to close.

When superheated gas passes from the coil into the suction line and reaches the sensitive bulb, the bulb becomes warmer because the rate of heat transfer from the inside of the suction line to the superheated gas is less rapid than to liquid refrigerant, so that an expansion of the charge within the bulb results, opening the valve.

Assume that the liquid line solenoid valve (7) has just opened, allowing the passage of liquid refrigerant. Since no liquid yet exists within the suction line at the sensitive bulb (5), the expansion valve (6), is open, allowing liquid refrigerant to enter the direct expansion coil.

As soon as the coil is filled with liquid refrigerant, liquid passes into the suction line (8) closing the valve (6) as described above. As the liquid refrigerant within the coil continues to evaporate, a time comes when superheated gas leaves the coil, opening the valve as described above.

As a result of this action, there is (in a properly adjusted valve) a regularly repeated fluctuation or "swing" in temperature in the suction line at the sensitive bulb, between the saturation temperature corresponding to the suction pressure at that point, and a temperature somewhat above that point.

But, although the temperature is fluctuating due to alternating periods of liquid and superheated gas, the suction pressure remains practically constant as it depends upon the balance between air-conditioning coil and condensing unit capacity, and will vary only in proportion to the load upon the equipment as described above.

If the thermostatic expansion valve setting is too rich, the "swing" in temperature will decrease, and may vanish entirely. (Overloading the valve may have a similar effect.) Under such a setting, liquid refrigerant will be permitted to "flood back," or return to the crankcase of the compressor, with the undesirable results already described.

Since the capacity of the compressor is lowered by "flood back," the suction pressure will rise, not because of the increase in developed capacity which is indicated by a rise in suction pressure in a properly adjusted system, but because the decrease in compressor capacity does not allow it to keep pace with the load.

Such a rise in suction pressure, accompanied by a rise in final air temperature from the air-conditioning coil (hence a decrease in air-conditioning coil capacity) indicates "flood back" due to a valve setting which is too rich, or inefficient compressor valve action.

If the valve setting is too lean, the "swing" in suction temperature becomes excessive, and then may vanish entirely with very lean settings. Similar results will be obtained with a valve whose capacity is too small, so as little liquid may be fed to the coil that a constant high degree of superheat exists in the suction line at all times. Under such conditions the capacity of the coil is seriously impaired, as much of it is filled with superheated gas.

Such conditions may be recognized because the final air temperature will rise while the suction pressure will be lowered because a portion of the load has been removed from the compressor.

If the expansion valve is properly set, it will pass too much liquid refrigerant when in the "open" position, and not enough when "closed." Under such a setting, enough liquid is allowed to pass through the coil to the bulb location when the valve is open to move the valve to the closed position.

In this position, the supply of liquid

(*Concluded on Page 13, Column 2*)

The Cooling System

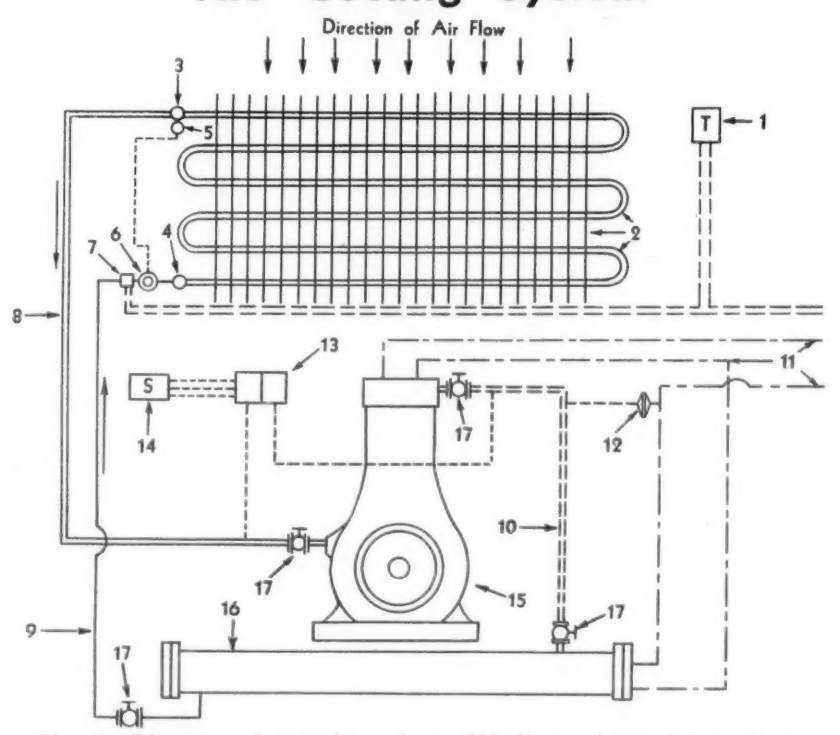

Fig. 1—Diagram of complete air-conditioning system for cooling.

1. *Room Thermostat*—Set at desired room temperature.

2. *Air-Conditioning Coil*—Select on basis of total capacity and ratio of latent to total capacity from tables in Capacity and Performance Section.

3. *Suction Header*—Must have ample size for good distribution.

4. *Liquid Header*—Especially important that this header be of ample size for good distribution of liquid refrigerant to all circuits.

5. *Sensitive Bulb for Expansion Valve*—Clamp in intimate contact with suction line.

6. *Thermostatic Expansion Valve Body*—Set for about 18° "swing."

7. *Liquid Line Solenoid Valve*—Operated by room thermostat.

8. *Suction Line*—Low pressure gas. See Data Section for Table of Sizes.

9. *Liquid Line*—High pressure liquid refrigerant. See Data Section for table of sizes.

10. *Compressor Discharge Line*—High pressure gas.

11. *Condensing Water Circulating Lines*—See Water Friction Chart in Data Section.

12. *Head Pressure Control Valve*—Set at pressure recommended in Condensing Unit Performance Tables in Capacity and Performance Section.

13. *High and Low Pressure Control*—Set high pressure element to stop compressor at 180 lbs. (for Freon). Set low pressure element to stop compressor at from 5 to 10 lbs., and cut in at 25 to 30 lbs.

14. *Compressor Motor Starter*—Operated by pressure control.

15. *Compressor.*

16. *Condenser.*

17. *Service (Shut-off) Valves.*

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DETROIT, MICH.

Control Functions And Operations

(*Concluded from Page 12, Column 5*)

will be sufficiently restricted to allow superheat to reach the bulb location, so that the valve will open again. In this way an effective control is obtained.

Due to the time required for the valve to close after liquid arrives at the bulb location, it is necessary to set the valve for a considerable "swing" in order to prevent the return of liquid to the crankcase.

In order for the thermostatic expansion valve to function properly, the sensitive bulb must be clamped in intimate contact with the suction header or line near the coil.

When the coil is manifolded so that it forms separate circuits, and an expansion valve is used to feed each separate circuit, it is *very necessary* that the sensitive bulb be connected to the suction line from the circuit which it serves so that it can be influenced by the gas temperature of that circuit only. If this is not done, liquid refrigerant will flood through from lightly loaded circuits and shut off the expansion valves for heavily loaded circuits when they should be open, thus "starving" the heavily loaded circuit and reducing the capacity of the equipment.

The proper procedure in setting up the thermostatic expansion valve is to start with a warm crankcase and a "lean" expansion valve setting (indicated by a swing of greater than 18°), so as to make certain that no liquid is returning to the crankcase.

If liquid refrigerant is returning to the crankcase, or the crankcase is cold, the performance of the compressor will be below normal. Having made certain that the setting is lean, the valve then should be opened slightly, and the fluctuation noted through one complete period (about two to five minutes). This should be repeated until the fluctuation has been reduced to about 18°, the bottom of the "swing" in temperature being at the saturation temperature corresponding to the suction pressure at the time.

After this, the system should be operated for some time until it is certain that the crankcase remains warm to the touch.

The reduction in air-conditioning coil capacity due to the periodic existence of superheated gas is negligible, because it exists for a brief period only and because it extends little or no distance into the air-conditioning coil. The above applies only to the "liquid filled" valve, as the "gas filled" valves furnished require no adjustment.

In order to get a clear conception of the condition within a "flooded" air-conditioning coil, it should be borne in mind that such a coil is not filled with solid liquid refrigerant in the sense that a cup is filled with coffee, for the load upon the air-conditioning coil is such that the liquid refrigerant within it is evaporating or "boiling" with such violence that the refrigerant is a mixture of saturated gas and the particles of liquid refrigerant and lubricating oil, all of which are carried along by the velocity of the mixture as a heavy fog.

Near the entrance to the coil, the percentage of actual liquid is quite high, but this percentage decreases as the suction end of the coil is approached, until at the end, very little remains in the mixture but gas.

Coil May Be Bottom-Fed

For this reason it is not necessary to treat the refrigerant as a fluid which will run "downhill" only. In fact, it is common practice (and perhaps advisable) to feed the coil at the bottom and take off the suction gas at the top, the velocity within the coil being sufficient to distribute the refrigerant and carry the oil over with the suction gas.

Mention was made above of the compressor pressure control (13). This control consists of two separate elements, one element being connected to and actuated by the suction pressure or the pressure on the "low side," while the other element is connected to be actuated by the head pressure, or the pressure on the "high side."

The suction pressure control stops the compressor when the suction pressure falls to a predetermined point, and starts the compressor when the suction pressure rises to higher predetermined point. Common practice with Freon in connection with air-conditioning work is to set the suction pressure control cut-out at 5 or 10 lbs., and cut-in at 25 or 30 lbs.

The differential should be sufficient to prevent too frequent "cycling." The suction pressure control is used to control the operation of the compressor in conjunction with the air-conditioning unit control as described above.

Pressure Control Operation

The high pressure control or "high pressure safety cut-out" stops the compressor when the head pressure rises above a predetermined point, and allows it to start after the head pressure falls below a predetermined point. The high pressure control is a safety feature which is used to protect the compressor and condenser from damage from excessive pressures from any cause.

The head pressure control valve, or water control valve is placed upon the inlet or outlet condensing water connection, and is connected by a control line to the compressor discharge line (10) so that it is actuated by the head pressure or condenser pressure. Rising head pressures actuate the valve to increase the rate of flow of condensing water, while falling head pressures actuate the valve to decrease the flow of condensing water.

By regulating the rate of flow of condenser water, the head pressure control valve will hold the head pressure practically constant at any load within the capacity of the equipment, and over a considerable range of inlet condenser water temperatures. The head pressure control valve should be set to maintain the head pressures and outlet condensing water temperatures recommended by the Condensing Unit Tables in Section No. 30.

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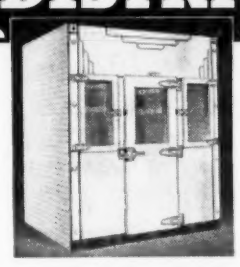
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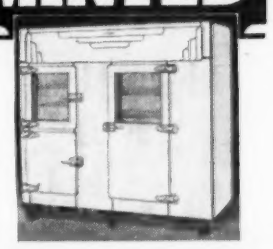
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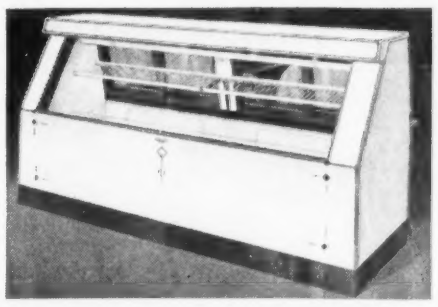
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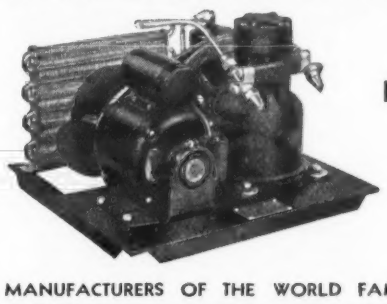
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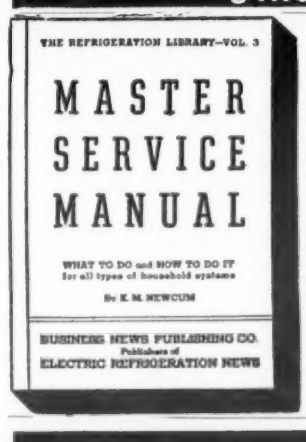
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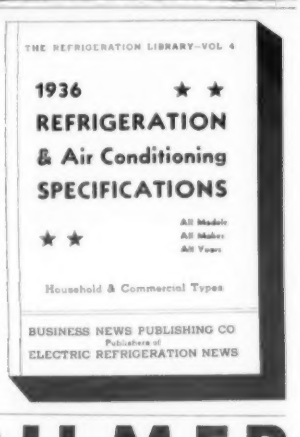

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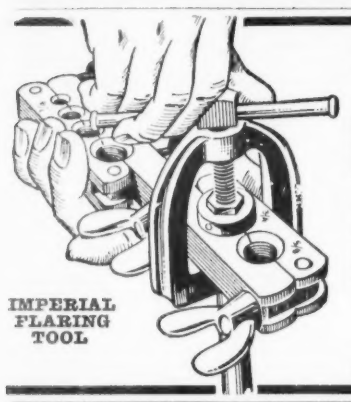

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COMMERCIAL Service Manual

By K. M. NEWCUM

Construction & Capacity of Air-Cooled Condensers

CHAPTER 6—Commercial Condensing Units—Continued

Air-Cooled Condensers

The condenser plays a very important part in any condensing unit. It is from the condenser that all the heat units absorbed by the evaporator are given off.

Most air-cooled commercial condensers are of the radiator type. The smaller condensers may be of the continuous tube type as shown in Fig. 64.

The larger capacity air-cooled condensers are manifolded together at both the inlet and outlet so as to provide additional internal capacity without using large size tubing.

Condensers are equipped with copper fins to provide additional heat dissipating surface.

The capacity of a condenser is based on the prime (tubing) and secondary (fin) surface, the temperature of the condensing air, and the velocity of the air through the condenser.

Most capacity tests and condensing unit capacity ratings are based on an air temperature of 80° F.

Smaller commercial units employ a single high efficiency fan located on the motor pulley to provide air circulation through the condenser. Many of the larger air-cooled units use both a fan on the motor pulley and on the fly wheel to insure circulation of air over the entire condenser surface.

Note also that the fans are covered with a metal casing, or shroud to further increase the efficiency of the fans.

This feature may be seen on the Frigidaire condensing unit shown in Fig. 67. The cut-away view, Fig. 68, shows the relation of the fan to the condenser shroud.

Frigidaire Condenser

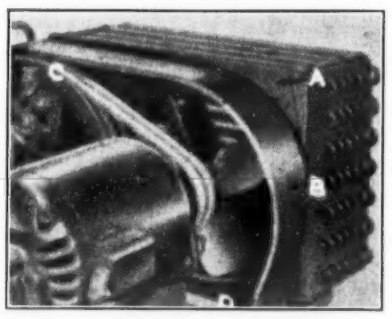


Fig. 67—Frigidaire condenser and adjustable shroud. Key to letters: A—condenser shroud. B—guard. C—suction valve. D—motor base adjusting bolt.

The capacity of a condenser is fixed. That is, it cannot be adjusted for variable conditions. For this reason the location of an air-cooled condensing unit is very important.

The space in which the condenser is installed should be large enough to provide abundant air circulation. It should be well ventilated to allow cool outside air to replace the hot air given up by the condenser. If not the temperature in the room, or surrounding the condenser will increase, and high head pressures and lower capacities will result.

Above all things, the condenser must be kept perfectly clean. What would appear to be a thin coating or film of dust or dirt on a condenser will act as an insulator, preventing the condensing air from wiping the tubes and fins, in many cases reducing the capacity of the condenser, hence the condensing unit, as much as 40% to 60%.

This decreased efficiency is reflected in higher operating head pressures and is often mistaken for air in the system.

It has been observed that operating head pressures with a dirty condenser are often as high as 30 to 50 lbs. above normal.

This excessive pressure results in higher head and condenser temperatures and is often the main cause of carbon formation in the head and that part of the compressor.

Needless to say all this results in increased operating time and current consumption.

Service men should make it a definite part of each service call to thoroughly clean the condenser as this is about the only service they can render to this part of the system.

Cleaning dust, lint and dirt from a condenser is a simple matter, but often is not completely done. The dust and dirt is in between the fins and on the inside tubes as well as on the outside of the condenser. A brush will clean the outside but will not get into the inside.

Condenser Shroud

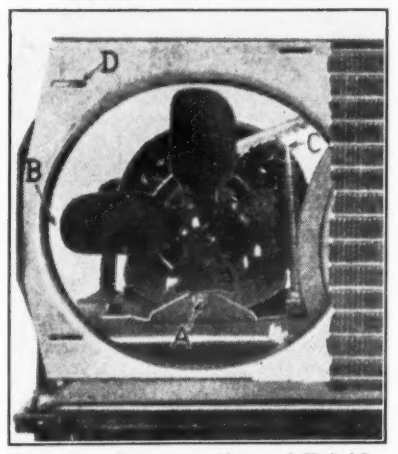


Fig. 68—Cutaway view of Frigidair air-cooled condenser shroud. Key to letters: A—cradle pinion bolt. B—fan clearance. C—belt adjustment stop. D—shroud adjusting screw slot.

A very simple method is to use a common automobile tire pump. When using the pump, use a quick downward stroke to create pressure.

The user will save several dollars a year on his current consumption and get longer life from his system if he is instructed to keep his condenser cleaned off just as he would the radiator of the automobile to prevent overheating. The effect is the same.

If the condenser is coated with oil, as is often the case, it will collect dirt very rapidly. This oil should be removed by thoroughly cleaning the condenser with carbon tetrachloride until all traces of the oil are removed.

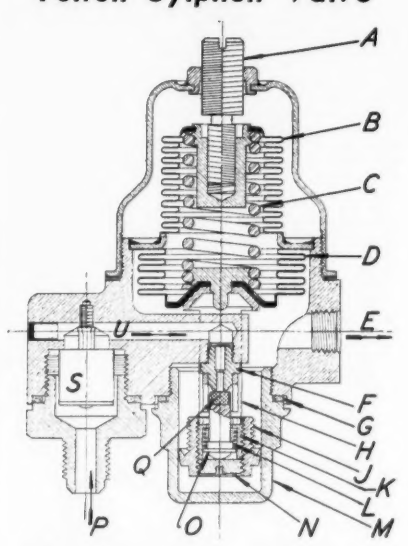
A condenser may be cleaned by using a garden hose and city water pressure. If water is used, care should be exercised in keeping the water off the motor and electrical connections.

In checking excessive operating head pressure, the condenser should first be cleaned. If after cleaning the condenser, the operating head pressure remains excessive, taking into consideration the temperature of the air passing through the condenser, the system may be over-charged or have air in the condenser.

Air in the system will collect in the topmost part of the condenser. To remove this air, the unit should remain idle for several minutes or until the condenser has cooled to room temperature. The condenser should be purged through the discharge shut-off service valve slowly for several minutes and in some cases several times until the operating head pressure returns to normal.

Air in any system operating in a vacuum on the lowside, is indicative of a leak somewhere in the lowside. A thorough test with pressure on the lowside should be made to locate and repair this leak to prevent a recurrence of this condition.

Fulton Sylphon Valve



Model 5000 in the new Fulton Sylphon line of automatic expansion valves.

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New Fulton Sylphon Valves Adaptable to Many Applications

(*Concluded from Page 1, Column 3*)

in the seat assembly, there is no possibility of damage from electrolysis.

Possibility of bellows failure is reduced in the design by the use of a two-ply Sylphon operating bellows.

It was found advisable to provide a positive seal at the adjustment screw to prevent moisture from entering the valve body and freezing between folds of operating bellows. This consideration is particularly important for low temperature application.

In event of main bellows failure, the extra sealing bellows also provides insurance against losing the refrigerant charge.

In operation and appearance, the valve follows conventional lines. A forged body was selected.

Zenith Develops Filter For Domestic Use

DETROIT—Zenith Carburetor Co. has just announced development of a filter for use in all domestic electric refrigerators using sulphur dioxide, methyl chloride, or Freon as the refrigerant. The filter is of the same general type as that which the company has been making for commercial refrigeration application for the past two years.

The new Zenith filter employs a stack-type filter element, which is said to provide a filtering fineness of .002 inch. The filter is also claimed to be leakproof, rustproof, and corrosion proof. It is removable for ease in cleaning, and is available in a number of sizes, for all types of domestic units.

Buys Majestic Stock

LOS ANGELES — Refrigeration Service, Inc., distributor of refrigeration parts and supplies, recently purchased the entire stock of parts for Majestic electric refrigerators formerly owned by Thompson & Holmes, Ltd., San Francisco.

Continuous Tube Condenser

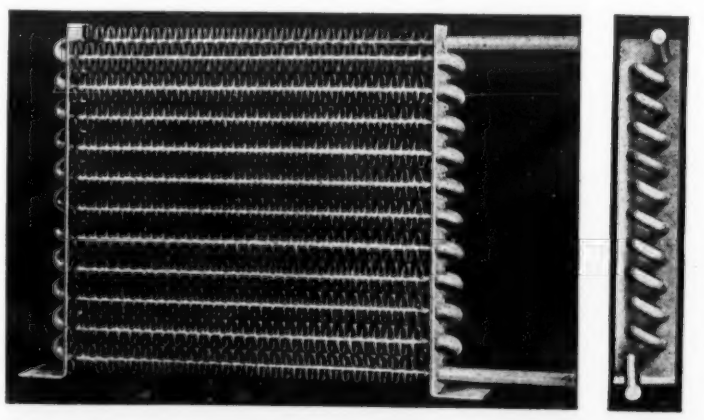


Fig. 64—Fedders continuous-tube type condenser.

Ginsburg Opens New Norge Dealership

CLEVELAND—Serv-U Norge Appliance Co. was recently opened at 15522 Kinsman road, at the entrance to Shaker Heights, exclusive Cleveland suburb.

Owned and operated by Lew B. Ginsburg, the new store will feature the complete Norge line of washers, ironers, refrigerators, and gas and electric ranges. Smaller electrical appliances will also be handled.

A complete electrical service department also will be operated.

'Oldest' Crosley Radio Placed in Museum

CHICAGO—"Discovered" in a contest held in connection with Marshall Field & Co.'s fall radio show, a Crosley radio receiver manufactured in 1927 has been placed in the Rosenwald Museum of Science and Industry.

Held to determine the oldest radio receiver in operation in Chicago, the contest had many entries. The Crosley set belonging to James P. Hanlon was selected as the museum entry. Receivers in use since 1928 and 1929 also entered the competition.

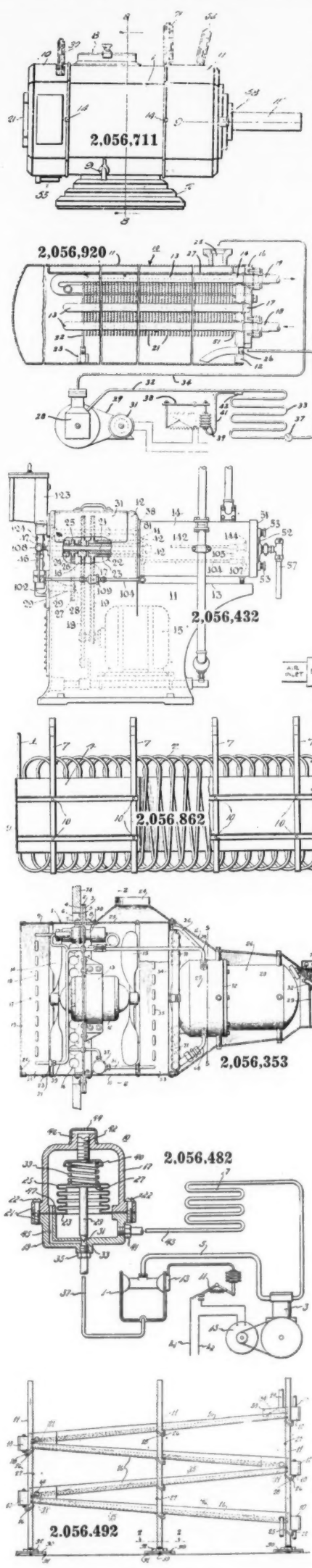
Dealer Uses Trailer In Sales Campaign

TOLEDO—Equipped with a newly purchased trailer staffed with a retail sales crew and a trained crew of women canvassers, Electric Range & Equipment Co., Leonard distributor here, has inaugurated a new sales campaign.

Operation of the system is simple. The crews accompany the trailer into various parts of the city, where the canvassing crew covers each street thoroughly.

Wherever they find a housewife still using an old-fashioned ice box, they thank her and, as they leave, place a small flag beside the walk.

Working from the trailer, the retail men spot these flags and approach the housewife with a well-planned sales talk.



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Issued October 6, 1936

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2,056,492. HEAT EXCHANGER. Minor W. Stout, Kansas City, Mo. Application Nov. 23, 1934, Serial No. 754,411. 20 Claims. (Cl. 257—234)

2,056,517. FAN OR BLOWER. Bernard Morse Guthrie, Chicago, assignor to Fairbanks, Morse & Co., Chicago. Application June 6, 1935, Serial No. 25,237. 2 Claims. (Cl. 230—232)

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2,056,646. REFRIGERATING APPARATUS. Frank Conrad, Wilkinsburg, and Christian Aalborg, Pittsburgh, assignors to Westinghouse Electric & Mfg. Co. Original application July 8, 1927, Serial No. 204,401. Divided and this application March 27, 1930, Serial No. 439,408. 9 Claims. (Cl. 230—58)

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PATENTS

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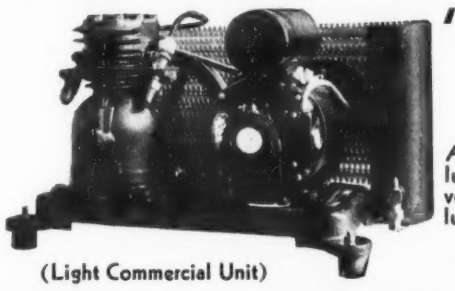
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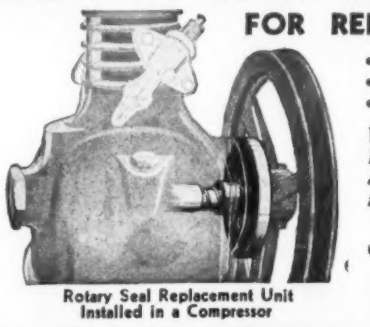
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